

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

A JOURNAL DEVOTED
 TO BEES
 AND HONEY
 AND HOME
 INTERESTS.

BEE CULTURE
 ILLUSTRATED
 SEMI-MONTHLY
 PUBLISHED BY A. I. Root
 MEDINA OHIO
 \$1.00 PER YEAR

Vol. XXII.

APR. 1, 1894.

No. 7.

FROM DR. C. C. MILLER.

HASTY'S HAD THE GRIP. But he hasn't lost his grip as a reviewer.

ADULTERATION doesn't seem to be much hushed up in last GLEANINGS.

NARROW SECTIONS are more quickly filled. Ought they not on that account to be whiter?

SOFT MAPLES bloomed here March 10—22 days earlier than last year. [Yes, they were in bloom here earlier yet by two or three days.—Ed.]

SECTIONS $1\frac{1}{2}$ wide, with separators, will contain comb $1\frac{1}{2}$ thick, the same as the honey part of brood-combs spaced $1\frac{1}{2}$; $1\frac{1}{2}$ sections will have $1\frac{1}{2}$ combs.

YELLOW-JASMINE HONEY, according to Mrs. C. L. Rice, in A. B. J., is not poisonous, but the pollen is. [Is not Mrs. R. mistaken? How is it, Dr. Brown?—Ed.]

THE BEE-PAPERS are discussing whether bee-papers should be discussed, and the *noes* have it. *Allee samee*, bee-keepers do discuss them. [Allee samee, some of 'em get mad.—Ed.]

ON READING page 242 I was struck with the strong similarity between the intimate acquaintance friend Root mentions and a constant attendant I have away out in Illinois.

DON'T MEDINA printers know how to spell catalogue, or has Jake Smith disciples among them? [Yes, but we prefer the modern *short* way. We also prefer "program" to program-me.—Ed.]

THE OLD-FASHIONED WAY of having hives in a straight row facing the same way has one big advantage for those who watch for swarms—one look along the row tells whether any are swarming.

THE BEE-KEEPERS' UNION, more than ever, seems to be looked upon as a protection for bee-keepers in different ways. Those not members get benefits from it; but is it fair for you to enjoy the benefits without helping to support it?

KEEP IN MIND that, aside from prevention of burr-combs and sagging, we need thick top-bars to keep our sections white. Did you ever notice that, when sections begin to darken, it's always at the part nearest the brood-combs?

IF JAMES HEDDON has any solid arguments against discussing adulteration, now is the time to bring them into use. After all, if he really believed that adulteration was a good thing for bee-keepers themselves, why shouldn't he go into it?

I'M ANXIOUS to hear a report of your trial of that percolator, Ernest. It's a big thing to have syrup that "will never sour or granulate." Cooked syrup *will* granulate without acid, and sometimes with, and I'm afraid the acid isn't a good thing for winter.

"THE INDICATIONS are strongly in the direction that wax used for containing honey only is whiter than and different from that intended by the bees to become a part of the brood-chamber."—C. B. J. May be so; but, please tell us *what* indications.

JAKE SMITH says, "Some likes jist the white part" of onions, "and eats tops and all." Does that mean grub is so scarce in his region that people have to eat what they don't like, or has Jake been drinking? [Now, Doctor, you needn't poke fun at our friend Jake.—Ed.]

IN REPLY to friend Shepherd, p. 225, I never found the progeny of the new queen crosser when I had killed the queen of a cross colony. Not only were they always gentler, but I was puzzled to find that sometimes there was a marked improvement before the old stock had time to die off. Of course, I never raised a new queen from the cross stock.

Go SLOW on that $1\frac{1}{8}$ spacing. With new comb it leaves a passage of $\frac{1}{4}$ inch, the space becoming constantly less as the comb grows older. I have combs an inch thick, and that would leave only $\frac{1}{8}$ space, too small for either queen or worker to squeeze through.

A MURMUR of disagreement as to the murmur of bees is heard between Pettit and Doolittle. Doolittle thinks it's a good thing sometimes in the cellar, and Pettit knows it's always bad. [This Straw would have been better if you had told what *you* think, know, or don't know, Doctor, on this question. You can redeem yourself by dropping a Straw in the next batch.—ED.]

"OUR FIRST WINTER occurred Feb. 23. Bees have flown lively all through the winter 5 days out of 6, and so their stores have disappeared," writes Dr. W. S. Adams, from Guy, Md. It's some comfort for us in the frozen regions to know that it takes more honey for bees in a warmer climate, but I believe I'd rather furnish the honey and be pinched less with the cold.

A RABBIT is cut in the end of a hive, then a rabbit is nailed on that rabbit, the one rabbit only being called a rabbit because it's nailed on to a rabbit, for it wouldn't be a rabbit if the other rabbit wasn't first rabbeted. There's no confusion, but it seems just a little mixed. [That's true; but even if mixed, the name answers practical purposes. If we were to change we'd be both mixed and confused.—ED.]

THE ONTARIO convention emphasized the point that, in summer, an opening in the upper part of the brood-chamber gives *downward* ventilation. I never thought of it before; but you know when you put the back of your hand at the entrance when bees are ventilating, the blast always comes out of the hive, and so it may be expected to come *in* at the top. [But suppose the top is sealed up tight?—ED.]

Y. P. S. C. E. are initials I first saw in a private letter from A. I. Root 13 years ago. I hadn't the slightest idea what they meant then, but now they're known all over the world. "Christian Citizenship" has started in this region, and will likely spread the same way. Look out for it in your neighborhood. [We flatter ourselves that we have been among the first to grasp new and practical ideas.—ED.]

CANADIAN BEE-KEEPERS are looking with longing eyes in this direction, S. T. Pettit saying in convention, "Across the line in the United States is our best market." At the same time, England is kicking vigorously against our sending any honey there. Well, that altitudinous Canuck, Pringle, worked hard to establish a market at the big show; and if his compatriots can't eat all the honey they can raise, I believe in giving them an open market on this side. [See Elwood's remarks on this point, in this issue.—ED.]

THE EIGHT VS. THE TEN FRAME HIVE.

AN INTERESTING DISCUSSION BETWEEN R. L. TAYLOR AND DR. C. C. MILLER.

Dr. C. C. Miller:—

My Dear Friend and Brother:—Yours of a late date, "commending to my consideration" the fact that you "don't remember" any practical proofs that for comb honey eight-frame hives are better than ten-frame ones, was duly received. I suspect you want me to make an experiment to prove or to disprove it. If so, I want to express to you my thanks that you are beginning to take a little interest in the "experiment business." But won't you come to my relief, and point out some method of experiment, by pursuing which satisfactory results may be obtained? I don't want to allow you to get me started on a wild-goose chase. Don't we know something about it now? I commend to your consideration the following points:

1. For the highest success in the production of comb honey, we want plenty of bees in good season. Now, other things being equal, in this latitude more bees will be produced early in an eight-frame hive because there is less space to be kept warm.

2. We want all the bees we can induce the colony to rear, up to the point of time when new bees will fail to return a profit. *In our latitude* we shall get more bees in the eight-frame hive, because, having less space to keep warm, the bees will increase faster early; and, in 99 cases in 100, the eight-frame hive would contain all the brood that can return a profit—all that can be started, say, up to June 15th; and as the tendency is then still to increase the amount of brood, the colony in the ten-frame hive will waste much more of the honey they gather in rearing unprofitable bees than will the one in the eight-frame hive.

3. For the greatest success in the production of comb honey, the bees must take possession of the sections promptly, and all the bees not required to care for the brood, destined to be useful, must join. In securing this action, the ten-frame hive, having more space below, and, as a rule, more brood that will prove a damage, and greater accumulations of honey in the brood-chamber, all of which circumstances have a powerfully restraining influence to keep the bees from going into the sections in full force, is manifestly at a great disadvantage. Therefore—

4. For comb honey, the eight-frame hives are better than the ten frame. Q. E. D.

For our latitude I can not see that the ten-frame hive has a single point of superiority. You may say this is all "circumstantial evidence." Well, many a man has been justly hanged on circumstantial evidence that was less conclusive. Nevertheless, I shall be happy to make the experiment if you can suggest any

method that will give promise of any definite result.

R. L. TAYLOR.

Lapeer, Mich., Feb. 1.

[Dr. Miller replies:]

As I believe this to be a matter of general interest, friend Taylor, I take the opportunity to reply to you on the pages of GLEANINGS. And, first, I return to you unopened your thanks that I am "beginning to take a little interest in the experiment business." I'm too indignant to accept them. "Beginning," forsooth! If there's any one who has taken a keen interest in the affair from the very first start, I'm the man. But I haven't time to quarrel with you about that just now.

Yes, you've guessed exactly what I want—a practical answer to the question, "Which is best for comb honey, 8 or 10 frames?" And I want the answer from the bees. Others may be as well situated to ask them the question as you, but I have a good bit of faith in the facility you have acquired to rightly interpret in plain English the replies given by the bees.

You ask, "Don't we know something about it now?" Candidly, I don't know. Some years ago nearly all comb-honey men changed to eight frames, in the belief that they were the gainers; but if in any case the question was fairly submitted to the bees I don't remember to have seen any account of it. You know very well that, time and again, very pretty theories have been started, every thing clearly proven on paper, winding up with a decisive Q. E. D., and then, when the bees were politely requested to accept the theory and act upon it, they would none of it.

I will now consider the points you commend to my consideration, and shall be glad to coincide with you wherever I can.

"We want plenty of bees in good season." Agreed.

"More bees will be produced early in an eight-frame hive" is an assertion, and I'd rather take the bees' word for it than yours. You give as a reason, "Because there is less space to be kept warm." If that counts for any thing, then a six-frame hive is still better, "because there is less space to be kept warm."

"We want all the bees we can induce the colony to rear up to the point of time when new bees will fail to return a profit." Agreed.

Your statement that, in our latitude, we'll get all the bees we want by June 15th in an eight-frame hive, and after that the ten-frame hive will raise a lot of wasters, reads very smoothly; but I'd like to know what the bees say about it. You say the bees will increase faster early, having less space to warm, and there may be truth in that if the same number of bees is in each hive; but have you settled positively that colonies in eight-frame hives will average as strong at the close of winter as colonies in larger hives? And if there's enough

honey in the larger hive, may not the empty space be less than in the smaller hive?

For fear of bringing a storm about my ears from a good many quarters, I want to be just as quiet and meek about it as possible, but still I want to suggest very gently that, if any one were inclined to be inquisitive, he might ask—mind you *I'm* not asking the question—whether the bees had ever stated, in a positive manner, that a lot of brood late in the harvest was a damage. A young man may get ahead faster in laying up this world's goods after he has a wife to support than when he was all alone. He has something to try for. Is it not possible that, with a large number of mouths to feed, the bees may buckle down a little harder?

"The bees must take possession of the sections promptly, and all the bees not required to care for the brood destined to be useful must join." Agreed.

"The ten-frame hive, having more space below, and, as a rule, more brood that will prove a damage, and greater accumulations of honey in the brood-chamber, all of which circumstances have a powerfully restraining influence to keep the bees from going into the sections in full force, is manifestly at a great disadvantage." How do you know all that? Do the bees say so? Is it a fact that a greater amount of brood and honey below restrains from going into the sections? If you take away all the brood and all the honey from below, will the bees go up into the sections with a rush? If the brood-chamber be chock-full of brood and honey, will the bees be entirely restrained from going up? Isn't the truth exactly the opposite?

I don't object to "circumstantial evidence." If more men were hung on circumstantial evidence, I believe human life would not be so cheap as it now is. But if there's any way to secure positive evidence, I do think it should take precedence. It is with no little diffidence that I make any attempt at suggesting methods. I much prefer merely to suggest the question, leaving you to work out your own methods. I think you are more fertile in that direction than I. If I were to suggest any thing, it would be something in this line:

Take ten colonies in eight-frame hives, and an equal number in ten-frame hives. Aside from the difference in the size of the hives, let them be as nearly alike as possible. To make the test satisfactory they should have been in the same hives last summer, and wintered over therein. This not being practicable, the colonies in the ten-frame hives should be put in the same condition as if they had wintered on ten frames. It would be manifestly unfair to take a colony out of an eight-frame hive and give it two empty frames or combs on putting it into the larger hive, unless you prove that all ten-frame hives have generally two such frames or combs in spring. If any feed-

ing is done either fall or spring, both should be fed alike. I think I need carry the suggestions no farther. The question I want answered is this: Taking a series of years, shall I get more comb honey with eight-frame or with ten-frame hives?

I beg that you will believe, my dear friend—and I am sure you will take my word for it—that I am not saying a word for the sake of mere argument. I want to know the truth for the sake of the dollars and cents in it. It is not a fondly cherished hope with me that I may find the ten-frame hive is better; but it is to some extent a fear. I shall be delighted to be convinced that the eight-frame is better, for I much prefer it if I can retain it without loss. There are some reasons that I can not take time now to give, that have great weight with me in making me fear that I have been making a mistake these years in working exclusively with the smaller hives. I am just a little afraid that we all went like a flock of sheep, without knowing fully what we were doing. Wasn't it mostly if not altogether on theory? If there are reasons, theoretical or practical, will it not be for the interest of all to have the matter fully discussed and fully tested?

Marengo, Ill.

C. C. MILLER.

[We had supposed that the question of the eight-frame was settled, at least for most localities in the Northern States—localities having one short spurt of a honey-flow of three or four weeks in early summer and another slight flow of dark honey in the fall. If the question is not settled, let's *make* the bees tell us.

Our friends the Dadants will go "agin" the whole of us, and we must acknowledge that they present some pretty good arguments favoring not the ten-frame but a little larger hive, in their book, *Langstroth Revised*. While Bro. Taylor is getting ready to "talk back" we should also like to hear from the Dadants.—Ed.]

NOTES AND COMMENTS ON SEASONABLE TOPICS.

A CHEAP WAY TO BIND GLEANINGS; THE WILSON BILL ON HONEY; THE DIFFERENCE BETWEEN NATURAL COMB AND THAT FROM FOUNDATION.

By P. H. Elwood.

It may be a matter of interest to the editor of *GLEANINGS* to know whether his subscribers carefully preserve their journals for future reference, or toss them into the waste-basket. I have mine from the beginning; and, although they are not often referred to, occasionally it is quite necessary to do so, while a hasty glance through them shows the progress made in bee culture and bee-journals. Where a subscriber does not wish to go to the expense of binding, a very good way is to place the numbers in order upon a board and drive four or five wire nails through their backs into the board. Then loosen them from the board and clinch the nails. The nails should be heavy enough not to bend

with light driving, and long enough so there is from a quarter to a half-inch for clinching. If the nails are too heavy they do not clinch well. A year makes two volumes. For a cover, nail on a couple of pamphlets of the right size, or a pasteboard cover. This method does not injure the journal for future binding, and is a great improvement over having the journals around loose. It takes but a few minutes' time.

After nailing I look them through carefully to refresh my memory, and to get some points that I may have overlooked in the busy season. I notice that the subject of sealed covers or no upward ventilation was pretty well discussed, both *pro* and *con*, in last year's *GLEANINGS*. The "cons" appear to have it. Years ago, when we wintered out of doors, and, as a consequence, bought a good many bees, we found that bees wintered indoors with no upward ventilation were decidedly better than those wintered otherwise. Those wintered in the same way out of doors were also better when sufficient protection was given to prevent condensation on the upper part of the combs. This, however, is very difficult to accomplish in this severe climate. Too much ventilation is usually given to outdoor swarms. One fall we packed 37 colonies in dry sawdust, from four to six inches thick. All except two were covered with nice new quilts, and all died except the two that had the old quilts, well covered with propolis, over them. Since then I have noticed many similar cases. For indoor wintering, unless the cellar is very damp, no upward ventilation of the hive is needed. We have not practiced it for years, and are well satisfied with the change. The best wintering I ever saw or heard of was last spring, where a large lot had been wintered with closed tops.

The Wilson bill, as passed in the House, lowers the duty on honey to ten cents per gallon. The present duty of twenty cents should be retained. Vigorous protest, undoubtedly, has been put in by our National and State societies against the proposed change. If there are no vigorous protests, there is danger that the last ten cents will be knocked off. California and the South will suffer the most by the change, but it will be the "last straw" for many bee-keepers elsewhere. Very many are now going out of the business, and but few, comparatively, going in. Market-gardening, small-fruit growing, and intensive farming, are advocated in *GLEANINGS* for those contemplating a change or addition to their present business of bee-keeping. The articles on onion culture, in the Mar. 1st number, are especially valuable for this class.

Since writing the above I observe by the report of the Ontario Association that our Canadian friends have their eyes upon our market for comb honey. Mr. Pettit says, in commenting upon the report of Mr. Pringle, Superintendent of Canadian Honey at World's Fair, Chicago, that "it reiterates what I said at Walker-

ton. that across the line in the United States is our best market. The closest market is the best, and we must keep our hands clean, and have a pure article, to give us the best advantage there." Mr. Pringle stated that he had been hampered by a specific duty of twenty cents per gallon on honey. On comb it had been figured out by a "peculiar arithmetic and guessing" to be from two to three cents per pound. Referring to the so-called sugar honey, he is reported to say that, under these circumstances, the advantages of Canada would be seen in the United States markets, not only for extracted, but for comb honey, so long as we keep it pure and undefiled. He could take a hundred tons of Canadian honey to Chicago tomorrow, and sell it readily at excellent prices. It may seem hard to our Canadian brethren to have a duty imposed upon their products; but *so long as they consent to have their foreign policy (war) dictated by rulers over the sea, secret enemies of our institutions*, they can hardly expect us to use our resources in such a way as to develop their strength.

ROOT PERFORATED ZINC A SUCCESS.

We have used a good deal of the Root perforated zinc for the purpose of keeping the queen confined to one story when extracting, and at other times, and it is a success. A few queens escape, but usually it is found either that the queen has passed through some opening imperfectly closed outside of the zinc, or that she is undersized. It would hardly seem advisable to change the size of the perforations for general purposes. We have not been successful in keeping two or more queens in the same hive. Even caged virgin queens in queenless stocks are not as well cared for as they ought to be.

TAYLOR'S FOUNDATION EXPERIMENTS.

The experiments of Mr. Taylor, on comb foundation, are very interesting, and, if continued, will be very profitable to producers of comb honey. Of course, one trial determines little. I shall expect, with further experimenting, that Mr. Taylor will reverse his opinion that old foundation is as good as new; also that the thickness of the base in foundation has little influence on the thickness of the base in finished comb. Further experimenting will probably also decide that, within reasonable limits, the less wax put into foundation, the better. Not only is the cost much less, but the comb honey is much better. Comb can be converted into wax, but wax can not be converted into flaky comb. The wax in drawn-out foundation chews up into wads, while chewed comb is brittle or in flakes. Where the bees thoroughly work over the foundation, as is oftener done with flat-bottom and Given foundation than with any thing else I have tried, there seems to be less of this objectionable toughness. The quality of the wax used also makes a very great difference in this respect. The Given press is a success in making brood foundation.

After the frames are wired, foundation can be made with it as fast as or faster than other kinds of foundation can be fastened into empty or wired frames. The press sent me was not adjusted nicely enough for surplus foundation; Besides, there was the difficulty of dipping sheets of uniform thickness throughout. The bees work this foundation quickly, but I can not say whether the base of the heavy side walls is always thinned down as much as is desirable for comb honey. Our method of wiring frames is to have the top and bottom bars sawed in two pieces. Then place fifty or more of these pieces side by side on a flat surface, with a lath frame over them having the slats the same distance apart as the wires are to be. A sharp knife is then drawn down alongside of each slat. The frames are next nailed together, using but the one creased piece at top and bottom. The knife-cuts make a fine place for laying in the wires; and, immediately after wiring, the other piece of the top and bottom bar is nailed on. We use a lath form of similar construction for cutting up foundation.

A NEW FACT ON BEES AS FERTILIZERS.

By all means, give us the facts on the fertilization of flowers by the honey-bee. Bees are an *assistant* in fertilization. With a few flowers they are a *necessity*. They are always valuable and never harmful. Any attempt to prove them so is but a waste of ink. Mr. Crane's article can not be too highly commended as a compendium of the main facts in the case. Especial attention is called to the increased vigor arising from cross-fertilization in contrast with fertilization from the flowers of the same plant or tree. Mr. Cheshire says (page 323, Vol. I., "Bees and Bee-keeping"), "The apple, as its blossom indicates, is strictly a fusion of five fruits into one—hence called *pseudosyncarpous*—and demands for its production in perfection no less than five independent fertilizations. If none are effected, the calyx, which really forms the flesh of the fruit, instead of swelling, dries, and soon drops. An apple often develops, however, though imperfectly, if four only of the stigmas have been pollen dusted; but it rarely hangs long enough to ripen. The first severe storm sends it to the pigs as a windfall. I had two hundred apples, that had dropped during a gale, gathered promiscuously for a lecture illustration; and the cause of falling, in every case but eight, was traceable to imperfect fertilization. These fruits may be generally known by a deformity—one part has failed to grow because there has been no diversion of nutrition toward it. Cutting it across with a knife, we find its hollow cheek lies opposite the unfertilized dissepiment." Frank Benton is in a position to thoroughly write up this subject and have it sent all over the country by bulletin from his department. A general knowledge of this subject would give prestige to our business, and be

a greater help in securing needed legislation than any thing else we can do.

Starkville, N. Y.

[Mr. Elwood does not write often; but when he does he seems to be loaded with facts. He is a keen observer, and one of the most extensive bee-keepers in the world, and we are sure our readers will read this with unusual care.—Ed.]

THE PINES.

WINDBREAKS; ARTIFICIAL HEAT IN BEE-CELLAR; V-SHAPED STARTERS NOT A SUCCESS; WHEN TO SET BEES OUT OF THE CELLAR.

By H. R. Boardman.

It may be new to you that my home here is becoming known among many of my friends by the above rather unique name. The profusion of ornamental pine-trees, and especially the long row that constitutes a grand windbreak for my apiary and home buildings, are its origin. And this brings us to the subject of windbreaks.

I am sure that, if windbreaks were fully appreciated, there would be more of them put out. They add wonderfully to the comfort of a home in checking the force of the fierce winds of winter and spring; and especially are they valuable to the apiary—so valuable that I think they deserve more than a passing notice. So well protected are my premises by strong dense pines that the fiercest blizzard is tempered to a mild breeze, and it is often pleasant and agreeable in the yard while the pines rock and roar, and shake their heads, while outside the weather is almost intolerable. No tree that I know of is better adapted for windbreaks than these coarse strong rapid-growing pines. So much for the pines.

The bees at "The Pines" are in splendid condition. I set out six colonies at the beginning of the warm spell, about the 2d of March, to see if they still knew how to fly. Their first flight showed them to be in as perfect condition as in November, when they were put into the bee-house, so far as I could discover; no more spotting of the hives than at their last flight last fall; brood-rearing is well advanced in most colonies. There has been a fire in the bee-house kitchen stove once a week ever since the bees were put in, until the beginning of the present warm spell. Artificial heat in the bee-house in winter is growing in favor with me with each year's experience.

In order to have my "hunny good the year round," as Jake Smith says (in case I should carry it over), I crated and removed it to a warm corner in my dwelling-house. But I have since hit upon a much better way. I sell it and have it out of the way, and am ready for the next season's crop. It is nearly all closed out now.

There are a few little experiences in my re-

cent work in crating and shipping honey that might be worth mentioning while they are still fresh in my mind. After meeting with some loss and vexation by breakage in shipping, I tried crating the cases into large crates, as recommended at the Home of the Honey-bees and by others. It has proved entirely satisfactory so far.

For the last two seasons I have been trying V-shaped pieces of foundation in the sections.



It compared so favorably during the season with sections filled with foundation that I began to be flattered that it might be economy to use it in that way; but I found there were

very many of these sections with starters in, especially toward the close of the season, that the bees forgot to attach the sides and bottom entirely, or in only a frail manner. Then the large amount of natural comb necessary to fill the section adds still further to their frailty; and while I do not object to these on this account for my own use, I shall hereafter use foundation full width, if not full depth, for all comb honey that is to be shipped. I use sections of two sizes—the $4\frac{1}{4} \times 4\frac{1}{4}$ in., and a larger size holding about $1\frac{1}{2}$ lbs. When I see how much nicer and better the larger size is always filled, I am forcibly convinced that the one-pound section has been a great mistake, a misfortune to bee-keepers, and I am not sure that it has been of any advantage to dealers.

I do not think there is any advantage in setting bees out of winter quarters at this time of the year, provided they are in good condition; but I have been watching the mercury and the daily weather report with increasing anxiety each day. As the temperature went higher and higher, 60 to 66°, and yesterday it rested at 70° for a considerable time, while in the bee-house, although not as high as outside, still it was warm enough, and gradually growing warmer. I went in this morning and made a careful examination. I stood a few moments in the dark, and listened attentively. The high temperature had increased the gentle hum of a few days ago to almost a roar. Bees were making aimless flights about in the dark. I struck a match and lighted my lamp—temperature, 62-3. Great clusters of bees were suspended beneath the hives from the bottom of the frames. A good many dead bees had accumulated on the floor in the last few days; many were yet struggling, and others seemed to be playing at hop, skip, and jump over their dead and dying companions. "Oh!" said I, "this looks wicked;" but I learned years ago not to allow my sympathies on such occasions to get the better of my judgment, and go and put the bees out before it was time. Of course, I should prefer to control the temperature so that they would not fly out and perish in a wholesale way, if it were possible; but I know from experience, that, if

they were put out, the mortality from chilling would be much greater. Even when in the best possible condition they become restless at a temperature of about 60°, and then they straggle out of the hive and are lost in the dark. If a much higher temperature prevails they begin to cluster outside the hive.

East Townsend, O., Mar. 6.

[Yes, indeed, pines make the best wind-breaks in the world. You know our apiary (see large cut on next page) is inclosed in a large hollow square of tall evergreens. As you say, it is much more comfortable on windy days *inside* of this square than out. The only trouble with the evergreens is that they are so long in growing.]

There was a time when the V-shaped starters received more favor than now; but if we remember correctly they were abandoned for the very reason you give.

And so you are beginning to favor artificial heat in winter repositories? This will give Dr. Miller a grain of comfort. He has stood almost alone in the advocacy of this idea; in fact, has almost been ridiculed for holding to such a foolish and antiquated notion.—Ed.]

MANUM IN THE APIARY

AND IN THE GARDEN; THE MANUM-LANGDON NON-SWARMER.

By A. E. Manum.

"Well, Mr. Daggett, we shall be obliged to defer our trip to the Eaton yard to-day, which we had planned to take, as Mr. H. W. Scott, of Barre, Vt., has just arrived, having come on the morning train; and as he says he must return on the afternoon train, we will spend the day with him here in the home yard, where I can show both of you my new non-swarming hive, and at the same time explain to you both its workings, and my experience with the Langdon-Manum non-swarming method. I see you are busy writing this morning; therefore, while you are finishing your writing I will show Mr. Scott over the farm, as he is more or less interested in farming. First, Mr. Scott, I will show you my potatoes. Here are 5½ acres in one field, and, as you see, they are just in blossom."

"Oh, my! Manum, what a fine field of potatoes, and what long straight rows! How in the world did you manage to get the rows so straight? Why, there is not a crook in them; and, besides, I see no weeds."

"The rows are 40 rods long; and to get them straight, two of us marked them out with a two-horse marker. I drove the team while my man held the marker; and the secret of these 5½ acres being so free from weeds is in having worked the ground thoroughly and often, with a cheap smoothing-harrow I made myself with old steel rake-teeth. The potatoes have been hoed but once, very lightly at that. I offer to give \$1.00 per bushel for every bushel of weeds any one can find on the 5½ acres."

"Why, here are strawberries, and a fine bed it is too."

"Yes, this is my new bed of just one acre, and I will *double* the price for weeds on this acre. I shall soon make a picture of this bed to send to our friend A. I. Root. Over here I have raspberries, mostly Cuthberts. I have, however, three rows of the Shaffers that I want you to notice in particular."

"Oh, my! What a rank growth of canes! Here is one that must be over 6 feet long."

"We will see. Yes, it is 7 feet 9 inches long. I have not nipped this hill back. I want to see how tall these Shaffers will grow when not checked. The berries, as you will see, are large and very handsome, and I assure you they are fine-flavored. Here comes Mrs. M. with her baskets. I think she intends to have you test them at dinner with sugar and cream. We think they are very fine. We will now go to the apiary, as I see Mr. Daggett is there waiting."

"What have you here, Manum—a new variety of oats?"

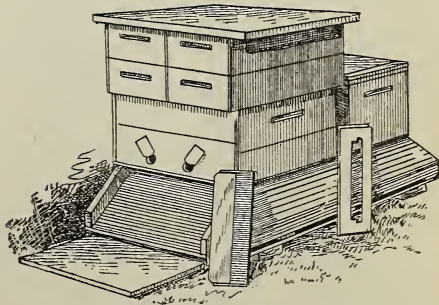
"Yes; they are the White Plume, a new variety that I introduced last spring; and, so far, I am well pleased with them, as they promise a large yield, you see by the long and well-filled heads."

"Why, Manum, I never saw such a fine field of oats. Just measure this head. It must be 12 inches long."

"I hardly think it. No, it is only 10¾ inches long; but my man found one a few days since that was 13¾ inches long, and I have found a number of stools with 14 stalks, and one of my neighbors reports having found one with 13 stalks, all from one seed."

"I think, Manum, you will get 100 bushels per acre from this field."

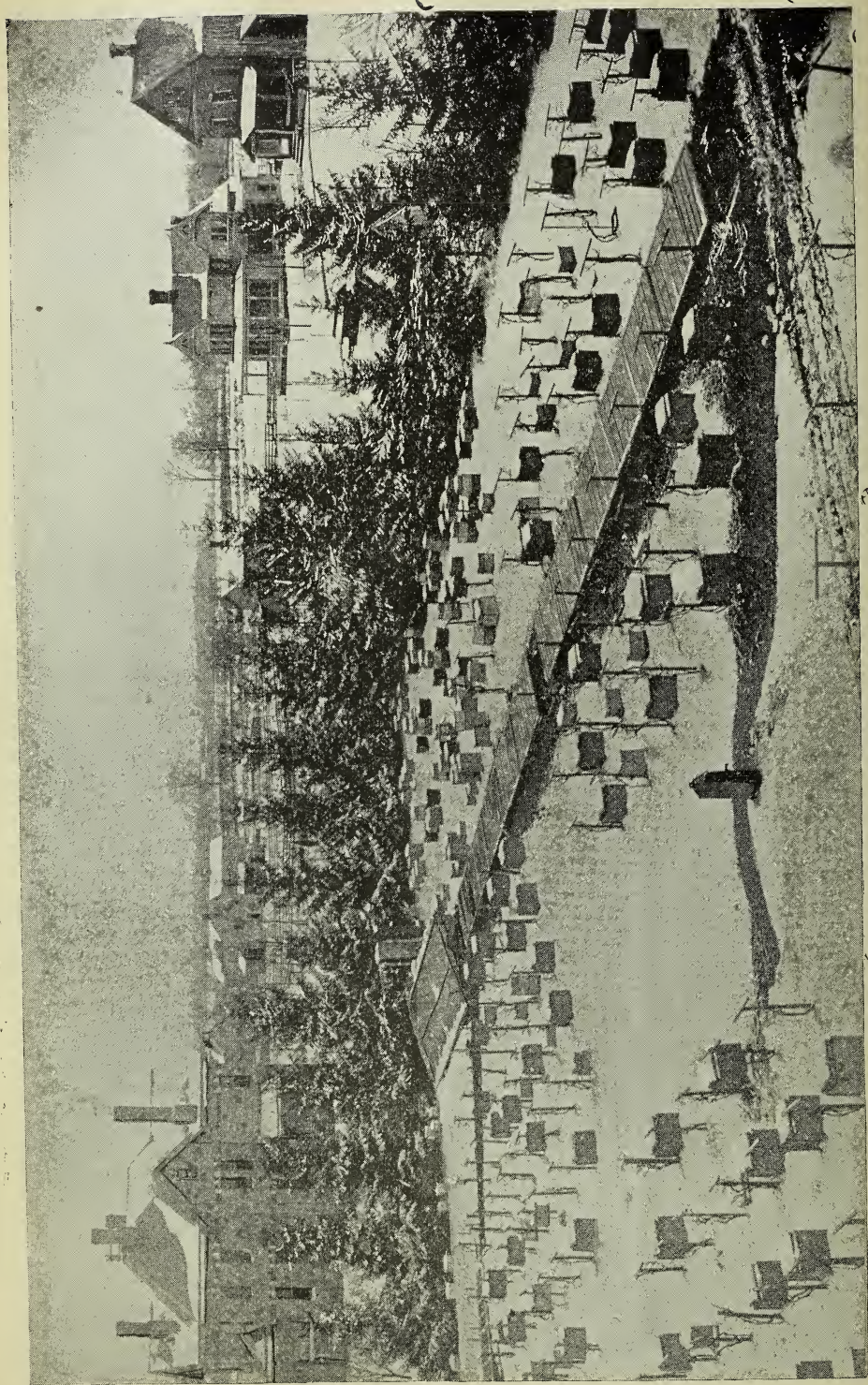
"No, I hardly think so, Scott. I have set my figures at 75 bushels per acre. Well, here we are in the apiary, and we will first examine the new hives. Here they are, you see; I have 8



THE LANGDON-MANUM NON-SWARMER.

stands, or 16 colonies, that I am running on this Langdon non-swarming plan."

"Well, but I don't see any thing similar to Langdon's device. How do you manage to run



WINTER VIEW OF OUR OWN APIARY, GIVING ALSO A GLIMPSE OF A RANGE OF HOT-BEDS HEATED BY EXHAUST STEAM; SEE EDITORIAL, ALSO GARDE NING.

the bees from one hive to the other, so as to work both colonies in one hive at will?"

"That is as simple as a turn of the hand, and I will explain it to you. Mr. Daggett has been waiting a long time for an explanation. He came here in June, and here it is the last of July, and I have had no time to explain the working of this hive before. The stand upon which the hives are placed is, as you see, long enough to accommodate two hives, with an entrance at each end, one for each hive, which admits the bees from the under side of the brood-chamber, precisely like the Bristol-hive entrance. The stand has a double bottom, with a $\frac{3}{8}$ space between the two bottoms, and is so constructed that, without any entrance-slides, the bees can pass in at one end of stand and out at the other, passing between the two bottoms; or they can, if they choose, enter either hive they wish from this $\frac{3}{8}$ passage. Now, then, you see I have the whole working force of these two colonies working in this left-hand hive, upon which there are two tiers of sections, or four Bristol clamps."

"How do you manage to force the bees from the right-hand hive into the left-hand one, and prevent their entering their own hive?" asks Mr. Daggett.

"I do that simply by the use of the tin slide you see standing up against the left-hand hive. This tin closes the under or main entrance entirely, forcing the returning bees, which belong to the right-hand hive, to pass on through between the two bottoms, and enter the left-hand hive through an entrance specially provided for them by the use of the wood slide, with a long slot in the middle, which rests here against the right-hand hive. The slot, however, in this slide is not exactly in the middle; as one side of this slide is narrower than the other, the narrow side is used when both colonies work in one hive, and the wide one is used when I wish to keep each colony separate. These slides and the entrances are so arranged that they work completely in uniting or separating the two colonies. You will observe that I have two escape-holes with cone bee-escapes over them, through which the bees can escape from the right-hand hive, that may have been shut in by the closing of the main entrance. These escaping bees, when returning, naturally go to the main entrance; and, being cut off by the tin slide, are obliged to follow along and enter the left-hand hive, thereby making that colony doubly strong. Then in five or six days I reverse the whole business by placing the sections on the right-hand hive and exchanging slides, when all the bees work in the right-hand hive, and in five or six days more I again exchange the slides and sections from one to the other, and so on through the season. It is necessary, of course, for the operator to keep a correct record of every hive in each apiary, so that none may be overlooked or forgotten, as

that would make bad work, and cause the strong colony to swarm, and the light depopulated one to become so much reduced that it would be ruined entirely."

"Now, Manum, after one season's trial of this non-swarmling principle, how do you like it? Can you recommend it to others?" asks Scott.

"Well, gentlemen, I hear the dinner-bell, and we will respond to that call; and after dinner we will continue this talk over the non-swarmling method."

SWEET CLOVER.

HOW IT LOOSENS UP THE SOIL.

By G. J. Yoder.

As is well known, sweet clover is a valuable honey-plant, while some persons regard it as a bad weed; but with eleven summers' experience I have learned quite a little about it. In the first place, I sowed it for its honey qualities; but I soon found there was something else of value connected with it. I sowed it on poor heavy soil in the spring of 1882. The following year it was a boon to my bees, yielding abundance of honey. I had sown it near the public road, and many persons going by would stop to see the bees work on it, and expressed surprise. The roots penetrate deep into the hard subsoil, and make the land loose and friable, and, after the crop is cleared off, it is in fine condition to put to other crops.

We once, just as it was done blooming, turned it under and sowed it to buckwheat, thus getting two crops of bloom in one summer. The following spring we sowed it to oats, getting a fine crop, while at the same time the sweet clover volunteered, making a heavy growth by the 15th of Sept., standing about three feet high. Now was our time to try its qualities for hay, and, suiting the action to the thought, the mower was brought out, and in due time we had it in a stack, making about $1\frac{1}{2}$ tons per acre. It was the sweetest-smelling hay that I have ever seen. In one instance I had to call the doctor one very dark night, and, as we came within a few rods of the haystack, the doctor stopped short and said, "What smells so wonderfully sweet?" On being told it was a stack of sweet-clover hay he was much surprised. It was actually so sweet that, every warm day during the winter, the bees would be flying about it. We fed it all out to our sheep, with corn fodder for a change, and I never had sheep do better. Horses will readily eat it, but cows do not care much for it.

WHERE SHOULD WE SOW SWEET CLOVER?

It will grow almost anywhere, even on very rocky hillsides and waste lands; but I prefer to sow it where I can keep control of it and get a crop of bloom and a crop of seed; then the next spring a crop of some kind, and in the fall a

crop of hay, or to wheat in the fall, and in the next fall a crop of hay.

Every other year it reseeds itself; but if put to cultivated crops a few years it can all be killed out. I made a garden-spot on a sweet-clover patch where there were millions of seeds, and in two years it was all gone.

CUTTING AND THRASHING THE SEED.

With us it grows from four to eight feet high, thus making it almost impossible to get it into a thrasher or huller. We cut it with a self-rake reaper, then make a platform on a sixteen-foot hay-rack, placing it on a skid made of poles bolted together with cross-pieces; then hitch three horses to it, and pull it to the field. With two light poles about eight feet long, and just heavy enough for a man to handle, and two pitchforks, we are ready for business. Now fill your platform, not too full; and if the clover is very dry, a few good strokes will land the seed in the bottom of the platform. Now tumble out the refuse; drive up, put more on, and so on around the field. A little experience will show how it should be done. When all is thrashed off, run it through a huller and you have the Bokhara seed.

WILL THE BLOOM YIELD HONEY EVERY YEAR?

It seldom fails to yield enough to keep the bees out of mischief, and keep up brood-rearing; but we seldom get much surplus; for blooming, as it does, at a time when very little else is yielding honey, it would take a large area to give us thousands of pounds.

As to off years, we have them too in this as well as in other honey-producing plants; but only once for us in eleven years was there an entire failure; yet it bloomed profusely, but seldom a bee was seen on it, but thousands of large flies, bugs, and what not but bees.

I have just finished reading the three books lately received of you; namely, *Potato, Onion, and Strawberry Culture*. They are grand and sound, and to the point.

Garden City, Mo., Jan. 15.

[Your article is "sound, and to the point," and we hope many will read it.—Ed.]

RAMBLE 105.

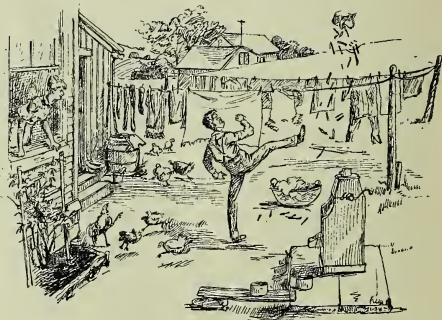
MARRIED LIFE IN CALIFORNIA.

There are doubtless many felicities in married life, and we meet their various phases as we ramble along. California is often noted for these, as we have often rehearsed; and while this State is, for some reason, noted for the number of divorces, there is also a marked attachment between man and wife that withstands all lesser breezes, and the sacred family circle is never broken. I have seen bee-keepers putting up stovepipes and putting down carpets and matting, and using not a swear word, while the wife has been indisposed, either real or im-

aginary. I have seen the husband on his knees, scrubbing the kitchen floor, or cooking the dinner, tending the baby, washing the clothes, and hanging them out, all as peaceably as a well-regulated Chinaman; and in all of my rambles among bee-men I have found not one divorced couple. There may be many, but they have not come under my observation.

The connubial relations are sometimes apparently strained, though there is no real anger. As an instance of this strained relation is the case of a young married couple of bee-keepers. Under very happy circumstances they had commenced housekeeping. Celeste was hard a work over the wash-tub, and John, not being very busy that Monday morning, kindly turned the wringer and filled the big clothes-basket. All went as merrily as a marriage-bell, when their heads came close together over the old wash-tub. There was a smack, an "oh my!" and a laugh. The grass was a little damp out along the clothes-line; and when the basket was full and the pin-basket brought, John offered to hang out the duds, as he expressed it, and proudly marched out with his load to the long line strung from pole to pole.

Pretty Celeste, all smiles, took herself to the nearest window overlooking the field of operations, and prepared to boss the job. Of course, John knew how to hang out clothes, or thought he did, for he had done the like service for his old mother, away back east, some of those cold frosty mornings. After a few words of badinage about his kindness in saving her little precious feet from getting wet, John made a grab at the basket and pulled out a towel and proceeded to hang it over the line midway of the towel.



"There, John, that won't do," came from the window. "It won't dry in a dog's age that way. Put the end over about the length of your finger, and pin it there. That's right, my dear: it will dry quick. You see, John, there is as much sense necessary to hang up clothes properly as there is in boiling eggs."

John fished out some more towels and pillowcases, and things moved along smoothly until a stocking was quickly swung over the line and pinned by the toe.

"There, John, don't you know better than to put stockings on the line that way? You craunch the toes of your stockings through quick enough with your big toe-nails without squeezing a clothes-pin down on it. Hang it t'other end up, so's the wind will blow through it. There! don't you see what an improvement?"

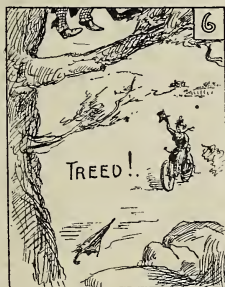
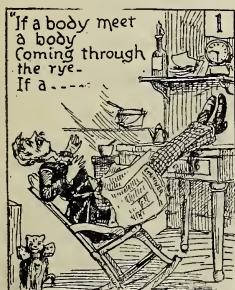
John began to look a little sour, but said not a word. The stockings, both long and short, were soon exhausted, and a big sheet was next hauled over the line. John proceeded to fasten this just as he did the towels; but Celeste, leaning further out of the window, shouted, "Why, John, hang that over by the middle. Don't you know better than to hang the sheet that way? The edge will brush the ground, and get dirty."

"Say, now," says John, beginning to warm up for an argument, "it's a poor rule that won't

dow. Don't tear those ruffles with your big hands; that's my—he-he-he—John, that's my—he-he-he—hang it up on the gore, John."

"Gore and be darned!" shouted John. "You can't think of any thing else, so you holler gore—he-he-he (spitefully). There, take yer tarnal old washing—he-he-he—and yer pin-basket—he-he-he," giving the latter a kick that sent it with the contents flying over the clothes-line; and John strode off into the fields, where it is supposed he cooled off.

Not wishing to disturb the pleasant reflections of either party I rambled away through the sage brush to my cabin, where I reflected happily upon the free and easy life of a bachelor bee-keeper. There was no cause for disagreement in my cabin. I do not smoke, but I laid off my coat, put my thumbs in the arm-holes of my vest, leaned back in my chair with



work both ways. Sheets must be hung just as towels are, so's the wind will blow through them and dry them quick. Don't you see?"

After a considerable debate touched with acidity, the sheets were hung to suit the woman in the window. John's shirt came next, and was put with the shoulders over the line.

"That won't do, John. Oh my! (with a pout) I'll have to hang up the clothes after all. A man does things so bungling. John (peremptory), hang that shirt up by one flap so's the wind will blow through it. There! that's the way."

John fished up another long white garment and looked at it doubtfully. His face was flushed. He was apparently mad. It needed but one more spark to cause an explosion.

"There, John, don't hang that up that way."

Celeste was leaning further out of the win-

my feet on the table, and imagined the rings of smoke were rising over my head like so many crowns, just as you read they do in the story-books. I felt so contented with all the world, so independent and happy, that I just made the welkin ring as I sang:

If a body meet a body,
Need a body si-i-i-i?
If a body kiss a body,
Need a body cri-i-i-i?

I can't imagine, though, what made me sing those words—a sort of premonition, I suppose. I really felt as though I was too happy to have the feeling "continner," as Dr. Jake Smith would say.

Once before during the easy season I felt quite elevated in spirits, and went out to have a gallop over the plain with Vix; but Vix had elevated spirits also. She elevated her back

several times; result, I returned to my cabin a dusty, sorrowful Rambler. I felt this time as though something was going to happen, and, sure enough, it came like a clap of thunder from a clear sky. It was in the shape of that open letter to Rambler, on page 181 of GLEANINGS. It was a great shock to my nervous system, to drop from such delectable heights to such a sad condition; and I wish right here to reprove your artist for picturing my happy state after reading that Morse letter. The happy state and songs were all before. Afterward I was sad, and there were no warbles in my lungs. To escape the visitation was my study night and day, and it was with joy I had a chance to go 60 miles from my usual haunts into a wild portion of San Diego County. Oak Grove Apiary, on the head-waters of the San Luis Rey River had to be moved, and surely no Eugenia would follow me into that sylvan seclusion. But I reckoned falsely; for, while laboring at the bees in my fancied security, a robust form, like unto what I had pictured Eugenia to be, was rapidly whirling toward the apiary, on a bicycle. Had it been Jake Smith, or some other musty old fellow, I should have been calm and collected; but seeing it was the one who bore the name of Eugenia, and under all of the delicate surrounding circumstances, please give me a little honor if I confess that I resolved to flee. But to flee from an expert bicyclist, such as Eugenia proved to be, was beyond my power, and a friendly oak-tree received me graciously upon one of its generous limbs. The cycle had to halt. Thank fortune, it could not climb; but the Eugenia form sat itself down upon a stone and gathered from the pocket an opera-glass, and commenced the siege. Eugenia was not much acquainted with the country, and I had a gleam of satisfaction in knowing that, ere the shades of night had deepened, the form would leave that stone. With a tremulous voice Eugenia cried:

"O cruel Rambler! long have I yearned for you; and now after long journeys, night and day, for you thus to flee from me and treat me so!"

"Aye!" said I, "yearn on and on: this heart of mine is as hard as adamant. Long years have passed since woman's wiles have turned one drop of blood more scarlet than the rest. Go, bold being, to your home, and let me rest."

"Nay, Rambler mine, the mission to take the heart so hard, and face so stern, and mold like unto an angel's, come from that leafy perch among the boughs, and let these hands, this voice, and these tears, minister to your comfort."

"O Eugenia! knowest thou not that it is the sphere of man to woo, and not yours? Knowest thou not that, where such a one as you so forgets place and station, and would to me a-wooing come, your words, your tears, only steel the heart the harder toward your kind?

Away, ere the shades of night and beasts and creeping things come in these lonely wilds to startle and destroy."

"O Rambler! knowest thou not that woman's sphere enlarges! To vote, to woo, to legislate, is the fashion of the hour. O Rambler! sit not like some gnome in the gathering darkness; to my petition wilt thou listen? Wilt thou turn one sympathetic glance? Wilt thou?"

"No, no, Eugenia; though your words are fair, 'tis not for such as me to wilt unseemly. Would it be for me to wilt? Should I wilt forth, I'd go to scorn. No, your glances, your words, your tears, are not enough to make me wilt. Away! I'll fly to sterner mountains, rocks, caves, ruin, desolation; among these hardened scenes I'll never wilt."

The stars were out; there was a crackling in the brush—a howl, a shriek. RAMBLER.

(Concluded in our next.)

THE HONEY-MARKET IN SOUTHERN CALIFORNIA.

By Prof. A. J. Cook.

The third subject which elicited great interest at the State Association was that of marketing the honey product. It was felt that, with such a sure production, such anomalous yields, and such excellent honey, the present haphazard method of getting the product to market was away behind the times; that it should be speedily superseded by some systematic plan in which all should be interested, and should help to carry out. The Citrus Fruit Association, or Exchange, of Southern California, was referred to, and the subject was referred to the Executive Committee, with the hope that, after a complete investigation, a plan might be formulated that would secure the objects desired. At the monthly meeting of the Los Angeles County Association, held last Saturday, the subject was again debated, and the writer was appointed to investigate the matter as fully as his time would permit.

There is no doubt that organized union in all such matters is very desirable. It is equally evident that the great success of commercial, manufacturing, and such other enterprises as railroads, etc., is largely due to the fact that they can and do work together. It is just as patent that the farmer has been kept back by his isolation, which stood in the way of such coöperation. The difficulty to-day rests in the fact that it is almost impossible to secure unanimity in any proposed scheme, no matter how wise or how well planned. The inexperience, too, of such producers has not fitted them to plan the most wisely, and so it is exceedingly important that, in making any move toward coöperation, great caution be exercised, or false steps will be taken that will imperil the whole undertaking.

Southern California has united in a scheme for marketing their citrus fruits. They have organized, have officers who look after the markets, and all producers who join the Union are bound morally and legally not to sell fruit except through the exchange. Each local association has a manager who determines the amount of fruit in his province, and he takes charge of all shipping, keeping track of the progress of the ripening of the fruit, informing all in his district how much to bring to load a car. That some such scheme could create markets that no individual effort could secure; could arrange for grading in a way that individuals would not practice; could arrange terms with railroads that could be secured in no other way, seems to go without saying. That wise plans would always be made, especially to begin with, or that wise administration would always be secured: wise and honest men always be appointed to office, and fruit really marketed, and not merely consigned before shipping, is too much to hope; yet this seems to be a move in the right direction, and we can not but earnestly wish it success. Of course, it is vastly important that all unite, and remain loyal to the plan. Can this be secured? I am optimistic enough to hope much from the scheme.

Now as to the honey. Do bee-keepers wish such an organization? Will they unite and work together? If they organize, shall the effort be made to unite with the fruit exchange, or work separately? Union with the fruitmen would tend to bring the two classes into closer harmony, and would save much expense. It is a plan well worthy of agitation, and nowhere in the world could it be tried with more hope and prospect of success than right here in Southern California. The bee-keepers read, are intelligent, are well organized, and, I believe, could and would work together. I should be glad to hear from our best men on the subject.

MOTHS AND POLLENIZATION.

The note in the last GLEANINGS (Mar. 1) regarding moths carrying pollen is of much interest. There is a large family of moths known as *Noctuidæ*, or night-flyers, that have long tongues, and do sip sweets from flowers. The cut-worm moths of the genera *Agrotis* *Hadena* and *Noctua* are specially wide awake in this direction. We catch many of these moths for our cabinets by what we call sugaring. We spread on the trees a preparation of syrup and vinegar, or stale beer. This attracts the moths which collect on it soon after sunset in great numbers, and so the entomologist finds this an easy way to increase his number of specimens of the *Noctuidæ*. The best time to sugar for such moths is in August and September; but every one who has worked in the maple-sugar bush knows that these moths are abroad even in early March. I have often seen them by

scores in the sap in March, before we covered our buckets. They were attracted by the sweets, and were drowned.

As I said in the article of last week, it is very likely that, before we had large orchards, when the fruit-trees were very few and scattering (and we all know that such was the case in the wild forests), there were enough indigenous insects to carry the pollen. I well remember when the few wild-plum trees were in the woods of my early Michigan home. In those days these moths and the few wild bees were often quite enough, I dare say, to secure good fruitage.

Claremont, Cal., Mar. 10.

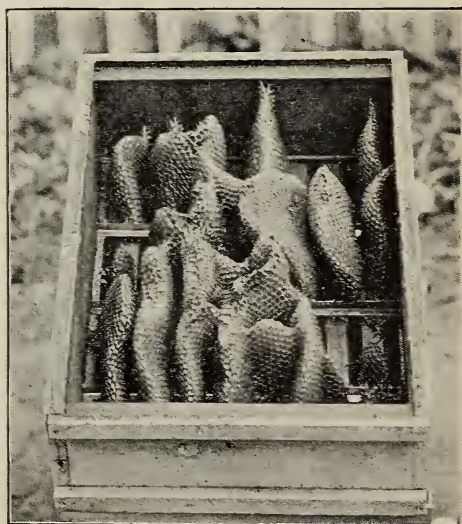
A STRANGE FREAK IN COMB-BUILDING BY BEES.

BURR-COMBS WITH A VENGEANCE.

By L. J. Templin.

I send by to-day's mail a picture of a peculiar product in the way of comb-building. Having never seen any thing of the kind, we thought it might be of interest to the readers of GLEANINGS to see an illustration of it. The circumstances under which this comb was built were as follows:

Mr. Geo. M. Deibert, son-in-law of the writer, residing in Florence, Colo., drove two medium



colonies into a hive of the capacity of a ten-frame Langstroth hive supplied only with foundation starters. To give plenty of ventilation he placed an empty super on the hive, and on it the flat cover. He intended to remove the super in a few days or replace it with one filled with sections. Being suddenly notified to join a party to go to the World's Fair, Mr. Deibert

left home without having given any further attention to his bees. After an absence of about three weeks, on his return home he found his united colonies had filled the hive with comb and honey. They had then begun on top of the frames and about the T tins of the super, and built combs upward, as shown in the picture. Some of these combs are about three inches thick at the base, and ascend in pyramid form to within a bee-space of the cover, but in no case did they touch the cover. To old bee-men this may be no curiosity, but to us boys it is quite new.

Canon City, Colorado.

[Here is an interesting case of how the bees will sometimes build combs *upward*. As a general rule, the work is commenced at the top and gradually extended *downward*. In the case before us burr-combs evidently were started, and as the honey season progressed these same burr-combs elaborated into good-sized combs. In time they would have been extended to the cover.—Ed.]

HEDDON'S REPLY,

CONCERNING THE ANALYSES OF HIS HONEY.

Dear Mr. Root:—As a brother bee-keeper, brother-publisher, and brother-man, standing under the law which certainly should not be more charitable than social and commercial judgment, and being always innocent until proven guilty, I crave space at your hand to make some statements and arguments in reference to the damaging matter which has appeared from time to time in your journal, culminating in the very serious charges implied, although not positively preferred, against me on page 240 of your last issue.

Taking up the matter on that page, consecutively, I desire to first call your attention to the fact that there is an element by far too prevalent in human nature, prompting a desire to injure our fellow-men. You are not forgetful (if you are I am not) that I have before been called foolish for advocating natural vs. artificial swarming; that honey would never become a staple product, but that we must look on it as a luxury for all time, and that we could make its production pay as a luxury as easily as or easier than as a staple; that the "Simplicity" hive of your devising was not as good a hive as my modification of the Langstroth; that close-fitting frames were best, when properly adjusted; that the consumption of pollen was the immediate cause of bee-diarrhea; that a bee-keepers' union for the defense of our inalienable rights would be a virtuous and effective organization, etc. All the above, however, has proven true, and most of it is now admitted; but this is not all: I have been called selfish and criminal for complying with the laws of my country in procuring a patent to defend my right to the results of my labor. These "reports have come to me." That I am wicked,

unwise, and foolish, is nothing new. You state that "complaints kept coming." I can not imagine whom they came from, when nineteen-twentieths of my customers (as what I inclose indicates, and I will send you the original manuscript to absolutely prove it, if you will publish it) praised the honey I shipped them, to the highest standard. I here and now call upon every person who has purchased honey of me during the last two years in question, or at any other time, for that matter, to send to this journal (GLEANINGS) for publication, a statement of their opinion as to its purity and quality, and why that opinion, and what satisfaction said honey gave to their customers, to the best of their knowledge. The list of my bee-keeper customers, which includes nearly every one of them, is as follows: Joseph Johantges, J. G. Lehde, C. P. Call, Jos. Bargehr, E. Frost, J. W. Chapin, W. Vermillion, F. M. VanEtten, O. Rudd, Jacob Shumm, Chas. E. Cook, Dwight E. Squire, W. Z. Hutchinson, Rev. C. Franke, Jos. K. Shultz, John Sunderman, F. R. Davenport, Desenberg & Schuster, Walter Jenman, L. B. Bell, Geo. Schook, Mary A. Bucklin, Jos. Myers, Mrs. F. M. VanFleet, James A. Minnich, H. Sparks, and A. C. Masson.

I believe that the above are all of my 1893 customers. If there are any more let them report. Following are the names of nearly all of my new customers of 1894. You will understand that most of my 1893 crop was also sold to the persons named above:

J. S. Yoder, John Senff, Fred Underwood, Thomas H. Mills, O. H. Lintner, W. T. J. Farrington, H. M. Hampton, W. T. Zink. But in the list of 1893 are two other names I wish to specially refer to. One is F. Minnich, North Freedom, Wis. He said my honey was not as good as his own, and didn't give good satisfaction, and then added the following: "You got a terrible blowing-up at our State convention, in regard to sugar honey, which served you just right." Here it will be seen that I lost a customer who discovered inferior quality in my honey because of what Prof. Cook said and wrote, and what, Mr. Minnich had been informed, by "reports coming in," was said by me. The other one is Geo. G. Willard, who was arrested, as you state on page 240. Under date of June 2, 1893, Mr. Willard wrote me as follows, in response to my solicitation for his testimonial: "Some of your honey has given satisfaction, some not. I have had better. Some of the late-made honey was strong and poor." Mr. Willard had been one of my best customers, and I was surprised at his response to my solicitation for his testimony. However, on the 5th of the following August he ordered three 60-lb. cans, and, on the 24th of the same month, five more 60 lb. cans; then on the 15th of the following November, 10 cans more, every drop of which was strictly pure, and 13 cans of which have been returned and re-remitted for, less the

freight. These 13 cans are now in my honey-house, just as they arrived from Mr. Willard, and the honey is candied solid.* This is all I know about the Willard honey.

Now, who is the well-known bee-keeper who purchased the two cans of honey and sent the affidavit? When at the World's Fair last fall I called on Thos. G. Newman, Manager of the Bee-keepers' Union. While there he showed me two bottles of honey said to be adulterated, and taken from one of my cans. Now, I do not pretend to be able to detect glucose in honey, by any method whatever; but the sample shown by Mr. Newman gave me the impression of being pure basswood honey that had been taken from the hives before it should have been, and very "green," or else had been watered. You are all aware that no two honeys taste alike. Honey from different blossoms differs much in taste and appearance, and most of you are likely aware of the fact that honey from the same variety of blossoms, in different localities, often not more than 40 miles apart, tastes and often appears very different. Those two samples never came from my apiary, and I afterward gained some evidence that they were sent to Manager Newman by W. D. Soper, of Jackson, Michigan, who purchased three cans of me, Feb. 13, 1893, of my 1892 crop. Page 240 states that Mr. Willard was fined \$25.00 and costs—a total of \$64.85. Mr. Willard wrote me, in a letter dated Dec. 6, that the total cost was \$70.85; and in another letter, dated Dec. 18 (both in 1893), the fine and costs was \$73.85. The fine being \$25.00, "costs" come pretty high, making arrests a very good business in Ohio. Mr. Willard was adjudged guilty by the court, solely upon the chemical-analysis report of Prof. Albert W. Smith.† You didn't state this in your editorial, nor did you state the fact that it was upon the evidence of another chemical analysis by this same Prof. Smith that Mr. Jankovsky was damaged in reputation, and by the law of the State of Ohio compelled to pay a heavy tribute to the pockets of officials; but on the previous page you state practically the same things regarding Mr. Jankovsky.

Before closing this article I will state that I have shipped no impure honey to Mr. Willard nor any other man, during 1893 and 1894. If I had, I would not have received the testimonials I did. When you say that my "utterances on the glucose question give coloring to the statements of the different chemists," you do not compliment the science of chemistry, and yet, in my opinion, you speak logically of the science, but illogically and wrongfully of me. I have never said one word to lend you reason for such a statement. Whenever I have written or spoken upon the glucose-honey-mixture question I have in every instance stated that no bee-keeper could *afford* to adulterate, and I didn't believe bee-keepers *were* adulterating. I have said that glucose was not poison nor in-

jurious to the human system; that 50 lbs. of it is consumed annually under the name of "golden drips," and other syrups, to every pound of honey eaten. I have also said that, while it might be to our interests to discourage its consumption in all forms, in all of which it is a competitor to our product, to go to complaining of bee-keepers, and making arrests, or doing or publishing any thing sensational that will get into and go the rounds of newspapers, will damage us materially. I have said these things, and I say them again, because I believe them true; and, further, I believe that a statement of these truths, if heeded, will be of immense value to our pursuit. You used the term "cheap honey." I have never sold honey at a price that could be called "cheap," except for an article superior to nearly all of the extracted honey on the market. I inclose you my price list, which quotes the lowest figures I have ever sold at; and I have a late circular before me, from S. T. Fish & Co., quoting extracted honey at 4½ cents. Prof. Wiley, of Washington, whom you quote, it must not be forgotten, was for several years *justly* called a liar, and destroyer of our business, which impeaches his testimony, or else he was for years worse abused than I am at this day by bee-journals.

You state that it seems to be "demanded of you that the bee-keepers of the land be notified of these things." Now, Bro. Root, how do you think my friends and myself, who positively know the truth, couple that statement with the one that you "practice and preach that kind of charity that is kind and suffereth long"? Admitting that you believe the truth of what you have published, even if it *were* true, I should like to hear your explanation of how and what good it will do the bee-keepers of the land to be "notified of these things." I can not imagine. If I were told that any prominent bee-keeper who had succeeded in the business, making it buy him \$10,000 worth of other property, besides increasing itself—that this bee-keeper has always paid every debt promptly; that his word was as good as a bank-draft in the commercial world; that he had been honored with the highest office in the gift of the people of his municipality; that he had the intelligence to invent implements and methods that were praised by the brightest of his class; was doing something that was both "foolish" and criminal, I wouldn't believe he was doing it as long as there was a shadow of doubt; and when there was not, I should be compelled to doubt the foolishness and criminality of the act, and be tempted to try it myself; wouldn't you? But what am I to do? If the science of chemistry is reliable, I can produce nothing but adulterated honey in this locality, and, consequently, must quit the business. If I have wronged

* Candying is no proof of purity; see p. 61.—Ed.

† Yes; but the analysis was confirmed by Prof. Hobbs.—Ed.

you I have wronged myself more by losing my temper over the inconsistent and damaging paragraphs which have been printed concerning me, all of which I knew were not true, and that may be the reason you complain of my not giving you "satisfactory answers." I wish to ask you why you didn't send me advance proofs of this printed matter on page 240, and in justice publish this reply in connection therewith.

You have previously had my "honey testimonials." I wish you would take the original manuscript and publish it. You have also seen my "price list."

"Now I have given the facts for just what they are worth, and the reader may draw his own conclusions."

JAMES HEDDON.

Dowagiac, Mich., Mar. 18.

[We are very glad indeed, Mr. Heddon, to see you appeal to the public at large who have purchased honey of you before, that gave satisfaction. Here is a postal just put into my hands:

A. I. Root:—It doesn't seem as though you are going to stop that cry of adulteration. If you had, I should want to stop GLEANINGS. You surely hit the nail on the head in the Heddon honey. I bought two cases of him several years ago, and I then thought it was not honey. I sent a sample to you by mail, but it was broken in transit.

Atherton, Ind., March 20.

G. F. AYRES.

You say you shipped no impure honey to Mr. Willard, nor to any other man, during 1893 and '4. How about what you shipped before '93 and '94? And furthermore I do not see that you state clearly that you *never* adulterated.

If it will damage bee-keepers materially by making arrests, or publishing the names of those selling glucose for honey, what in the world are bee-keepers to do? I am aware that S. T. Fish & Co., and other commission men, have offered extracted honey in quantities at a low figure; but so far as I know, no one has advertised honey in a retail way as cheap as or cheaper than you have done, *for the same grade and source*.

Had you been present at some of the recent national conventions, especially the one held in Washington and that held during the World's Fair, in Chicago, you would have seen Prof. Wiley not only warmly welcomed, but held in very high esteem by the bee-keepers of our land. Prof. Wiley may have been unwise in the past, but he surely is the friend of all bee-keepers now.

You ask what good it will do the bee-keepers of our land to be notified of these things. It seems to me the answer is self-evident. See contents of postal above. If a bee-keeper and honey-producer has been guilty of adulterating his honey with glucose, I do not think he will follow it very long after he has been publicly exposed through the journals. This policy will help to protect bee-keepers against this glucose competition.

The two cans of honey that are now in our possession have a printed tag attached to them, reading just like this, and just like other tags from you direct:

FROM
JAMES HEDDON,
DEALER IN
BEE-KEEPERS' SUPPLIES,
HONEY AND BEES.
DOWAGIAC, - MICH.

Why didn't we send you an advance proof? You yourself answer the question. We wrote to you a year ago, once or twice, telling you of the evidence that we then had in our possession,

and you wrote letters to us, and to other parties, wherein, as usual, you "lose your temper," etc. Yes, indeed, we have a letter from you to another party wherein you refer to Prof. Cook and ourselves as "fools," "silly gang," "simpletons." In a recent communication to us you accuse us of trying to rob you of your rights, "of using the blackmail system," etc. We do not see how you could expect advance proofs under such circumstances.

If the chemists of our land are ignorant and vicious, we should like to let judges of honey, and honey-producers, taste of the stuff in those cans which came to us from you through a third party as pure honey. We know that honey from different localities varies, and that late fall honey is often poor in any locality; but out of the thousands of samples that have been submitted to us for inspection, we never yet tasted any honey gathered by the bees, having such an unmistakable flavor of corn syrup as this. There is enough to it to go around, and it speaks for itself plainer than words. A. I. R.

Mr. Heddon refers to the honey of Mr. Jan-kovsky, from S. T. Fish & Co., that was pronounced by Prof. Smith to be adulterated, but which, by Prof. Spencer, on its second analysis, was declared to be pure. Mr. Heddon probably failed to observe that Prof. Smith pronounced the honey adulterated with *sugar syrup*, and showed only 15 per cent. We have before stated that we believe it is generally admitted by the best chemists that it is not always possible to be certain regarding the small per cents of *sugar* adulterations, especially if the syrup has passed through the organism of the bee; but when we come to the matter of *glucose* adulterations, we are not aware that the chemists have ever made any mistake. Glucose is very easily detected, and its presence can be known to a certainty. On page 688, Sept. 15th No., 1892, GLEANINGS, you will remember Prof. Cook reported having sent to Prof. Wiley and some others of the best chemists of the country 50 samples—some adulterated with glucose, some with sugar syrup, and some not adulterated at all, but all known to Prof. Cook by number, and the exact amount of adulteration, if any, in each of the samples. When the reports of the analyses were received, it was shown that each of the chemists recognized unerringly the glucosed samples and most of the sugar syrup samples. It seems to us that this test ought to be pretty conclusive. Mr. H. may refer to the case of Mr. Chas. F. Muth, whom everybody knows to be opposed to glucosed adulterations, but whose honey was pronounced adulterated with glucose, by one of Prof. Wiley's associates. But it has been conclusively shown that these glucosed samples, alleged to have come from Mr. Muth, bore counterfeit labels; and we have not a doubt in our own mind that a man who would forge a label would not hesitate to adulterate.*

If Mr. Heddon has not adulterated, his recent utterances defending the practice, objecting to the change in the constitution of the Bee-keepers' Union, and saying, among other things, that "all the Bee-keepers' Unions this side of fairy-land could not stop one little honey-producer from adulterating," and trying to make us believe that, apparently for the purpose of making glucose-mixers escape detection, is about as reprehensible as to adulterate.

* Since writing this our attention has been called to the fact that Mr. Muth did send Prof. Wiley some of his honey—honey of undoubted purity—and that it was by him pronounced "probably pure." This would indicate that at that time there was an element of uncertainty; but since then the science of chemistry has made great advances; and, so far as glucose is concerned we think there is no uncertainty

Referring to the next to the last paragraph, we have only to say that the report was received; but the testimonials, instead of having names and addresses, were simply designated by number, and, as such, they have no value; and even in the article you give names but no addresses. If you will furnish the original manuscripts we will either publish them or refer to them as genuine.] E. R. R.

CALIFORNIA ECHOES.

By Rambler.

Several bee-keepers at the California State Convention said they had seen bees carry wax in their pollen-baskets.

There were several bald-headed bee-keepers at the convention. I noted that, in every instance, they were married men.

Bachelor bee-keepers must all be adepts at cooking, from the many cooking-recipes I get from them. I extend a bushel of thanks for the kindly aid.

Honey sometimes ferments and gets sour. It must be very unripe, though, to have the whole mass ferment. The sour surface can, many times, be poured off when the greater part in the bottom of the can is good honey.

The more some people get stung, the more dangerous the effect; but with the majority the effect goes the other way, and the effect becomes harmless. I recently found a bee-keeper who said it swelled on him only during dog-days.

Whitewash makes a very good coating for bee-hives, and, if mixed according to the Mexican plan, it will last three or four years. The above plan is to mix with the whitewash a mucilaginous substance from a certain species of cactus. This applied to their adobe houses lasts many years.

It has been ascertained that the size of native Californians is an improvement over the original stock. The length of life is also prolonged. It is attributed to the mixing of the blood of many races, and the purity of the air breathed. The same will perhaps be the result on animals and bees.

There is still some discussion in relation to 8 or 10 frame hives. The comb honey man generally prefers the 8 frame, while the extracted man prefers the 10-frame. The way to get a uniform all-purpose hive that can be expanded and contracted is to use the shallow brood-chamber, making it a 10-frame chamber.

That little matter of shipping queens to Inyo Co., Cal., has another item of difficulty in the fact that the man wants *virgin* queens, and virgin queens are not so hardy to ship as fertile queens; in fact, I don't believe they are as hardy as a worker-bee. The shipment has to go a long roundabout way, and through a wintry belt of our climate. That queen-breed-

ers may try their hands at this difficult problem, I will give the address of the gentleman who wants the queens in April. It is H. Trickley, Bishops, Inyo Co., Cal.



SMOKING BEES WHILE MOVING THEM.

Question.—Don't you think it would be a good idea to give some smoke occasionally on the road, when moving bees, to keep them quiet? Would it not help to keep them from melting the combs? I had several melt last year while moving a distance of four miles. I expect to move more this year.

Answer.—If I am correct, combs melt down, while moving bees, only from the heat they create in their confined condition; and if this is so, the only thing which will overcome the difficulty is ventilation sufficient to allow this heat to pass out of the hive. I do not know that smoke has any effect in keeping bees quiet, only so far as flying out and stinging is concerned. When bees are frightened in any way, either by smoke, moving, or otherwise, they fill themselves with honey, and, when thus filled, they are not inclined to fly or sting, but they are inclined to run off their combs on foot, so that they may get away from their combs, seeming to realize that, unless they do go off the combs, they will melt down and be obliged to disgorge over the combs and themselves the honey taken, when a general ferment takes place, and the whole colony becomes extinct by stickiness and literal suffocation from heat and moisture. Smoke can not possibly be any remedy for this trouble; for, the more smoke used, the sooner suffocation would naturally take place. But plenty of ventilation allows the heat, created by the bees in their efforts to get off their combs, to escape from the hive, and thus we not only allow the heat to escape, but quiet the bees as well, as each bee can breathe free and easy, so that there is no danger of suffocation. Bees can be moved a few miles in a cool or cold day, in early spring, when not very strong in numbers, without any precaution more than closing the entrance, so that the inside of the hive is entirely dark, and I have moved bees from two to three miles in this way on cool days in June, when the bees were nearly strong enough to swarm; but I would advise no one to undertake it unless using a spring wagon and much caution so as not to arouse the bees in loading them. The only proper way is to have a rim fitting the top of the hive, three inches deep, having wire cloth on one side of it, which can be quickly fastened to the top of the hive, wire-cloth side up. Remove the covering to the top of the hive; adjust this

rim, and close the entrance to the hive bee-tight, and you will need to take no other precaution; for, let the bees be handled as roughly as they may, consistent with not breaking down the combs, there will then be no danger of the melting of the combs, as the whole colony can move off their combs into this rim and keep cool through the ample ventilation provided by the large surface of wire cloth covering them. Some seem to think that the entrance to the hive should also be covered with wire cloth; but from the experience I have had in keeping bees confined when moving them, and otherwise, I think there is a less loss of individual bees by having no light enter the hive save at the top, where the bees can crawl up and cluster. If the entrance is covered with wire cloth, a certain number of bees seem to consider it their duty to try to open that entrance, and so struggle and bite away at the obstruction till they wear themselves out, and die from exhaustion.

SUPERSEDING QUEENS.

Question.—In your book you speak of finding a colony about to supersede their queen, and then keeping them raising queens for you as long as the queen, about to be superseded, lived. The question I should like to ask is this: How do you know, or how can you tell, when a colony is about to supersede its queen?

Answer.—From an experience covering a period of 25 years, I think I can safely say that bees never build queen-cells to a state of perfection great enough to be supplied with eggs or larvæ unless they expect to swarm or supersede their queen. To be sure, they will start embryo queen-cells, or "acorn-cups," as some call them, all along during the season of the year when they can fly from the hive, but none of these are carried or built out further toward perfect queen-cells, by way of lengthening out and drawing the mouth of them down to the size in which we find eggs and larvæ in them, unless the bees are either calculating to swarm or to supersede their queen. So when you find lengthened-out queen-cells, you can rest assured you will find either eggs or larvæ in them; and when you find such out of the swarming season you may know that the bees are about to supersede their queen. Now, when finding such lengthened-out cells containing eggs or larvæ you may always know that such a colony will save and rear all the larvæ (unless injured in transferring) into fine queens you may give them in prepared cells, as I have given in my book, and all queens so reared will prove to be the very best queens that you can possibly raise under any condition, or by any of the known plans. No matter whether the colony intends to swarm or to supersede its queen. There is this difference however: If the colony swarms, that puts a stop to its rearing queens for you; but if it intends to supersede its queen it will build queen-cells right along for you as

long as the old queen lives. But you must not let them hatch a queen, but keep the queen-cells taken out, before any hatch, all the while; for if a young queen is allowed to hatch, the bees may let her kill the old queen or do it themselves, when they will build no more cells.

FOUL BROOD SPREADING.

Question.—If a hive is attacked with foul brood, how long a time will it require for the combs to become one-half or more affected?

Answer.—That depends very much upon the time of year, and upon how much foul-broody honey was taken into the hive when the disease was started. If one of my colonies was to rob out a diseased colony, bringing from 10 to 15 pounds of honey from it during the month of April, I should expect that said colony would have cells of diseased and dead larvæ throughout all the brood by the middle of July, to the amount of one-half or more of the cells containing brood; but of course the dead and live brood would be all mixed up to a greater or less extent. If a few bee-loads of honey only were taken, and this during September, I should not expect the brood to present the above appearance before the next August, and possibly not till the spring of the second year.

SECTIONS CARRYING FOUL BROOD.

Question.—Would there be danger of communicating foul brood to a healthy colony by using over it the crates and sections which had been used the previous season on a diseased colony (the combs in them containing no honey), provided the crates and sections were scraped, and wiped with a dry cloth?

Answer.—This is something I never tried, and, from all the experience had with foul brood during the early seventies, and knowing what foul brood in the apiary means, I would say that I should not want to try such an experiment, for the risk would be too great. However, if I had many such crates of sections I think I would do this: I would take one or two colonies away from all other bees, three or four miles, and use these crates on them, keeping the remaining crates where no bees could gather propolis from them, and, after two years' test, if no harm resulted to these colonies, I should consider it safe to use the rest anywhere.

FEEDING FLOUR TO BEES.

In early spring, when the plant-world has not yet commenced to furnish pollen, flour can be given to the bees as a substitute. As flour as well as pollen promotes the rearing of brood, the use of it is to be commended to bee-keepers; and especially should those bee-men use it who live in regions where early spring is not the rule. Last spring I made a new trial of feeding flour in the open air, and it worked well. I filled a comb-box half full of flour, laid over it a sieve having meshes of the right size to exclude drones, and placed the same in the vicinity of a

hive, slightly raised up. The bees took the flour through the sieve with far more convenience, and quicker, than out of old comb. No particles of flour were left remaining; whereas, by the methods used before that time, the flour became somewhat granulated, so that the bees could not carry it out. Wheat flour works the best. Even several days after the pollen began to come abundantly, the flour was eagerly taken by the bees. The sieve should fit in the box in such a manner that it can be pushed down as fast as the flour diminishes in volume. It is best not to select too small a box, for the pressure of the bees is generally great.

Medina, O., Mar. 19. KARL R. MATHEY.



C. C. S., of Ark., asks how to move an apiary a quarter of a mile without having the bees go back to their old stand. *Ans.*—We would refer you to the article by G. M. Doolittle on p. 235 of our last issue.

J. S. L., of N. Y., has from four to six frames of bees, brood, and honey, in an eight-frame hive, and would like to know whether he should put in the rest of the eight frames. *Ans.*—Only as fast as the bees require them for room in which to cluster.

A. M., of O., inquires whether it is necessary to wire shallow or half-depth frames for extracting. *Ans.*—We would advise putting in two wires, first to fasten the foundation centrally in the frames, and, second, to prevent any liability of the combs breaking out.

W. M. H., of Mich., bought two hives, presumably two-story, in the upper story of which the bees built combs up against the cover. As nearly as we can make out from the letter, there were no frames in the upper story. *Ans.*—We would remove the upper stories and transfer according to the directions given on page 19 of our catalog.

J. P. G., of Ky., referring to the short method of transferring, given in our catalog on page 19, would like to know whether there is any danger in leaving the old hive with the few bees to take care of the brood, honey, and combs. *Ans.*—No, there will be enough bees to take care of it; but the entrance should be contracted so that the few bees may be better able to resist robbers.

F. C., of O., has 75 or 80 lbs. of wax, and inquires how many pounds of foundation he can get out of it. *Ans.*—You ought to get as many pounds of foundation of any kind as you have pounds of wax, less the impurities that may have been in the original cakes; and this, in case of good wax, is practically nothing. Of

course, if you are slovenly and wasteful in your work you will have proportionally less foundation.

L. H. L., of Pa., wishes to know how much acid to use to a two-gallon bucketful of comb. *Ans.*—For wax that has not been rendered into cakes—that is, broken combs, more acid must be used. A good deal depends upon how old the comb is—that is, how many cocoons are in the cells themselves. At best, out of two buckets of comb only, you will not get very much wax. If you have a solar wax-extractor, we would advise you to use that. A tablespoonful of raw sulphuric acid to about half a pail of water would be sufficient for the quantity of comb you mention.

T. E. H., of Ark., notices that we advertise starters for brood-frames, and would like to know how wide these starters should be. *Ans.*—They may be anywhere from half an inch to full width of the frames; but generally about half an inch is used. The main purpose of the starter is to get the bees to build the comb centrally in the frames. Without starters there is danger that the bees, as you say, will build crooked combs, sometimes crosswise of the frames. The only way that we know of to make straight comb is to use starters, or, better, full sheets of foundation, wired with horizontal wires.

W. L. M., of O., has 20 colonies of bees to move a distance of 20 miles, and wants to know when it would be the best time to do it; and would we advise him to do it at night? *Ans.*—You can move them at any time after settled weather. If the weather is not too hot you can do it as well or better in the day time. Make sure that your frames are secured, and that the bees have plenty of ventilation. Wire cloth over an ordinary entrance, if the colony is not too strong, or weather hot, will afford sufficient ventilation; otherwise remove the top, and tack mosquito-netting or wire cloth over it. If the day is frosty, ventilation at the entrance may be sufficient.

J. E. M., of S. C., desires to know, 1, whether he should extract what honey the bees may have in their hives in the spring, so as to stimulate them to greater energy, or let them have what they may have. 2. "Do you recommend putting in full-sized sheets of foundation in sections?" 3. "Is it necessary to wire foundation in frames if we do not expect to extract?" *Ans.*—1. No, no. Leave the honey in the hive. It is poor policy to try to starve the bees to work, on the principle of "sink or swim." Let them have all the stores they have, and more too. 2. Yes. 3. No, it is not absolutely necessary, but decidedly advisable. Why any one should think wiring is unnecessary, when it costs so little to make a sure thing of the combs, is beyond our comprehension. The expense of the wiring material is about 10 cts. per 100

combs; and the labor, if performed during the winter months when nothing else can be done, is practically nothing. A few broken-down combs that have not been previously stayed by wires will pay for the cost of the work many times over.

J. R. S., of Ind., has a weak colony, and he inquires how to strengthen it up for the coming summer. *Ans.*—Contract their brood-nest to as small a space or to as few combs as they can possibly cover, having made sure that they have plenty of stores. When the weather is warm enough so they fly a little every day, give them a little stimulative feeding, with half a pint of warm sugar syrup. We omitted to say that such weak stocks should be, if not already, put into double-walled hives with some good soft warm packing around them. For that matter, this will apply equally well to strong colonies; for no stocks do as well in the single-walled hives in early spring as those having adequate protection.

R. M. C., of Cal., has just extracted some honey from unfinished sections of last season, and desires to know whether it will start robbing to set these out where the bees can clean them up. *Ans.*—Instead of putting them outdoors where the bees can have a regular jubilee over them, said jubilee finally ending up in a row, put the sections in crates and stack them over the brood-nest of a strong colony. If the hives are made so that they may tier up one above another, this can be very easily done. Sections might also be put in stacked-up hives, without the full colony under, providing the entrance is contracted to the space of one bee, so the bees could clear them out slowly, on the plan of gentle robbing, spoken of in these columns during the last year or so. *R. M. C.* asks again whether it would be prudent to transfer now. We do not see any reason why in your locality you could not do it almost any month in the year. The short method spoken of in our catalog is the one that we recommend.

N. A., of Wis., would like to know, 1, how to make a swarm cluster upon something from which they can be easily taken. 2. He requires a mold for beeswax, upon which his name may always appear in raised or depressed letters. 3. He asks also whether Norway spruce would stand the climate of his State. *Ans.*—The spray-pump recommended under "Swarming," in the A B C of Bee Culture, if properly used, will drive a swarm of bees in the air like a flock of sheep; and we have not only made the bees not cluster on places of their own choice, but in some instances have been successful enough to cause them to alight on some low-growing tree. It is always best to have low-growing shrubbery, or, better still, grapevines, growing around and among the hives. Bees are pretty apt to cluster upon any thing accessible after entering the air. 2. A mold for wax

would be very expensive. You might be able to get a wood-carver to scoop out a block of wood with your name in the bottom of it, so that the impression would be left on the wax when it is cold. A tin receptacle with your name stamped upon the bottom in raised or depressed letters would be the best; but a special die, costing perhaps \$30.00, will be required; but when this die is once made, thousands of the tins could be turned out from it. 3. We could not advise you regarding the Norway spruce in your locality.



BEES IN ST. PETER'S CATHEDRAL, ROME.

One very often meets with bees in this great church, but not, of course, living ones. They are molten, chiseled, and artistically painted. This arises from the fact that this great edifice was completed under Pope Urban VIII. This pope was from the noble family of the Berberini, of Florence; and the insignia of this family, on their shield, was three bees. When the decorative work of this art-loving pope appeared in nearly every feature of this edifice, his coat of arms, the three bees, was caused to appear also, and so we have the spectacle of these busy workers in St. Peter's church.

Medina, O., Feb. 20. KARL R. MATHEY.

SPREADING BROOD; IS IT ADVISABLE FOR BEGINNERS?

I see the A B C says nothing in regard to spreading the brood in the spring, and I should like to know if I should be spreading it too fast if I did it as follows:

My hives are the 8-frame Langstroth, and I should want to commence about the 1st of Apr. in this locality; and if they have 2 frames of brood at that time, spread it to 3; in just 10 days, spread it to 4; in 9 days more, spread it to 5; 8 days more, spread it to 6; 7 days more, spread it to 7; 6 days more, spread it to 8. If they had 3 frames of brood at first, instead of 2, I would spread it to 4, and then commence again in 9 days instead of 10. Do you think that, if this plan is all right, it would do to spread it any faster? R S. CHAPIN.

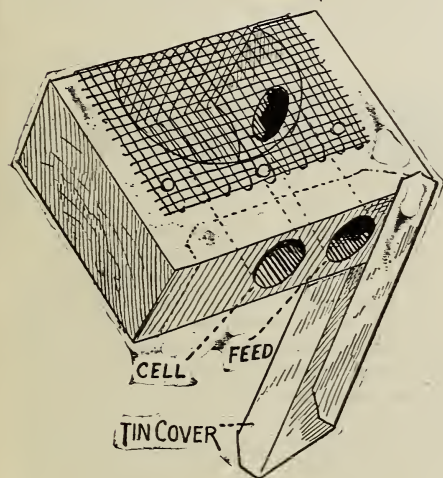
Marion, Mich., Mar. 1.

[No, we do not say very much in the A B C about spreading brood, because we believe that beginners, as a general rule, will do more harm than good by it. The plan that you propose is a little too severe for the average colony; but with moderate weather, or such weather as the bees can fly every day, with the nights not too cold, you might be able to spread the brood as fast as you say, providing the bees are packed in a good warm chaff hive. But we would advise you to go slow, even then. If you want to get a little experience, all well and good; but as a general thing, only veterans should at-

tempt to do very much at this spreading business. There are so many conditions that it is impossible to give a rule that will hold good in most cases.—ED.]

QUIGLEY'S NURSERY CAGE.

I send by to-day's mail a sample of a nursery cage devised in Progressive Apiary the past season. The plan of putting in the queen-cell and feed is taken from Mr. Alley's cage; the rest of the cage, and manner of using it, is my own. so far as I know. These cages are used in a case or super with wooden T rails, and set in the cage like sections. They are put over a strong colony to hatch out the cells. When a queen is removed, the cage is turned bottom up, so that



the apiarist can see just how many queens remain. By using a good nursery cage a breeder can nearly double the number of queens in a season with the same number of nucleus colonies; then if you have a lot of cells that will hatch on Sunday they can be put in the nursery Saturday evening, and they will be all safe Monday morning. E. F. QUIGLEY.

Unionville, Mo., Dec. 30.

OLD HONEY.

An interesting discovery was recently made in the carpenters' building-yards of the Tafala Railroad, in Spain. A large elm log having been cut off, there was discovered in the middle of it a spacious cavity which was nearly filled with honey-comb, besides which the skull of a squirrel was found. An entrance to the cavity was nowhere visible, and there was no sign of unsoundness in the wood. Round about the cavity there were counted fifty annual concentric growths of wood. The bark was complete and uninjured. The bees had evidently been in possession of the tree for several years. Previously to that, the squirrel had, perhaps, lived and died there, as it had gnawed the hole

out evenly. The narrow entrance had become closed by the gradual encroachment of the growing wood, and the tree grew fifty years without the honey being injured in the least.

Medina, O., Mar. 15. KARL R. MATHEY.

[We presume that honey was promptly extracted.—ED.]

LITTLE NUGGETS OF ADVICE TO BEE-KEEPERS.

Do not imagine that all the bees in an apiary have nothing to do but watch your motions. That would be as great a mistake as to place yourself right in their path and stand still to meditate, or swing your dumb-bells.

Never think you know what bitter is till you have tasted a bee-sting, nor that you know all of fire till you have felt the sudden heat produced by that same little instrument of exquisite torture.

Never think you know how many bees even one hive holds till you run your lawn-mower too close to it, or rouse their just ire by some other equally unwarrantable intrusion.

Do not shout at a bee-keeper, or keep up a long and continued stream of talk when he is in the thick of his work with hive open, and its lively inhabitants mostly turned out and congregated about his head, and expect his immediate attention. Bees are not deaf, and their masters are not always *patient* men.

Attention to these directions might save yourself or others annoyance when in or about the apiary. R. M.

Jan. 10.

WISCONSIN CONVENTION; SOME OF ITS LARGE YIELDS.

At the annual convention of the Wisconsin State Bee-keepers' Association, held at the State-house, Madison, Feb. 7 and 8, the following were elected officers for the ensuing year: President, Frank Wilcox, Mauston; Cor. Sec. and Treas., J. W. Vance, Madison; Rec. Sec., H. Lathrop, Browntown.

The attendance was not large, but the sessions were enjoyable and helpful to those present. All reported a good crop of honey last season; and from reliable sources we learn that Southern Wisconsin can show yields as surprising as any in California. One man in Dane Co. reported a yield of 2300 lbs. extracted from five hybrid colonies that were not allowed to swarm. They were in hives having a brood chamber about three feet wide; the brood was spread in order to obtain a large force of workers, and afterward the hives were tiered up with half-depth frames, L. size. There were other reports nearly as good; but let me say to those who may have an eye on bee-keeping in this favored land, you can't buy good bees at \$2.00 per colony as they say can be done in California.

One important act of the convention was a resolution directing that the association, through its secretary, and in behalf of the

bee-keepers and honey-dealers of Wisconsin, ask the Classification Committee to make the rates on extracted honey the same as on syrups when in similar packages.

H. LATHROP,
Browntown, Wis., Mar. 8. Rec. Sec'y.

FLOUR PASTE FOR STICKING LABELS TO TIN.

Occasionally I see in GLEANINGS that parties have trouble in making labels stick to tin or glass. In the last issue, such complaint is made by the editor, in speaking of a new kind of mucilage, or glue, that he is offering for sale. I don't see why any one should have any trouble in getting labels to adhere firmly to either tin or glass. A simple flour paste will make them "stay there," is easily made, and insignificant in cost, a teaspoonful of flour making enough paste to put on 50 labels 3x6 inches in size.

Sparta, Miss., Mar. 9. L. HALL.

[There has been almost a universal complaint that the ordinary pastes, including that made of flour, will not stick labels to tin. If you know of any way by which the flour paste will hold a label on tin for a year or more, you must have a knack unknown to the rest of us. Perhaps you can tell us.—Ed.]

EXAMINATION OF HONEY AND WAX.

The Austrian *Journal of the Apothecaries' Union*, in No. 29, 1892, contains a report in regard to examinations recently made in food and drugs, from which I extract the following in reference to honey and wax. Four kinds of honey were examined, one of which contained about 45 per cent of cane-sugar syrup. Another, under the name of "Turkish Honey," contained four per cent of clayey earth. Two samples were unmixed.

Three samples of wax were examined, which also were adulterated. They contained:

	Per cent.	
Wax.....	41	48.1 19.3
Stearic acid.....	32	35.0 11.2
Paraffine.....	27	16.6 69.5

In the entire list examined (embracing about 27 varieties and 532 samples), no object was found that was so much adulterated as bees-wax.

KARL R. MATHEY.

Medina, O., Mar. 19.

SUCCESSFUL USE OF WATER-BOTTLES IN QUEEN-CAGES.

Seeing you have failed in your efforts to provision queen-cages with a vial of water, perhaps you would like to know how we prepare the one of which Mr. W. A. Pryal speaks in his article in the *American Bee Journal*. We used two cages, one supplied with Good candy; the vial is fitted into the other, and the two are nailed together. We use a small piece of sponge to stop the bottle with. It should be stopped tight enough to prevent its leaking. You can test the matter by filling the vial with water, and stopping it up and laying it on a piece of paper. If it wets the paper you have not stopped it tight enough. A queen and 16 bees thus supplied were mailed here at Chriesman, and traveled to Mr. Pryal, at Temescal,

Cal., and from there back to me, and only a few of the bees were dead when they reached me. There were a few drops of the water in the vial when it returned. It is said to be over 2000 miles from here to Temescal. If so, that queen traveled 4000 miles, and was in fine condition.

I have kept queens caged for weeks at a time, provided with a vial of water, and they always seem more lively than they do when not thus provided.

C. B. BANKSTON.

Chriesman, Texas, Mar. 1.

[We are of the opinion that friend B. has contributed a valuable idea in the use of the sponge. We shall certainly try it. Will the Atchleys send us a queen and attendants? We will return them. The queen may be sent back and forth as long as she is alive. Is it cruel? No, because it may save the lives of thousands of other queens.—Ed.]



WILD CUCUMBER; OTHER VINES FOR SHADE AND FOR RAISING THE BEE-FLIGHT;
SEE PAGE 90.

Have you a perennial vine? The vine we have here, *Echinocystis lobata*, is an annual, the seeds peculiarly marked; seed-pod shaped like a cucumber covered with spines, but not aggressive, either as to spines or growth. I planted seven seeds in the spring, and four grew. The flowers, a greenish white, were profuse, growing in spikes, and continued long in bloom. They are said to be fragrant, but that I did not notice. I think the bees did not care for them; but if used for a screen, that might be as well. Here, to have them grow, care must be taken to plant early enough to subject the seeds to frost.

It seems to me, if we want permanent screens, or screens for even a few years, perennials are more desirable, as giving less trouble, and being more likely to be ready when needed. The madria is a rich vine and a good grower, but the roots must be lifted and cared for like the dahlia.

How would cinnamon honeysuckle and rose-vines suit, brightened with the annuals spoken of by C. P. C., or using them till the other vines were established?

Please ask Dr. Miller to tell us how to adulterate our butter with honey to get that delightful English flavor. Should the honey be granulated?

RUTH MOORE.

Tiffin, O., Feb. 12.

[You are correct. The wild cucumber is an annual and not a perennial. We were under the impression that it sprang from the roots each year; but Mrs. R., to whom we referred the matter, says our old vine springs each year from the seed. Yes, a perennial vine would be preferable.—Ed.]



Feed the flock of God, . . . not as being lords over God's heritage, but being ensamples to the flock.—1. PETER 5: 2, 3.

JUST before going to press, March seems disposed to "go out like a lion." It came in "like a lamb," and verily we had *hoped* that the "lamb" would stay with us.

WHAT's the matter? Well, we have got the cart before the horse. Mr. Manum's article, that appears on page 227 of our previous issue, should have *followed* the one in this number. If the reader will refer to the former he will see that they fit a little better when the order is reversed.

It is with much regret that we announce that Mr. Charles Nash Abbott, founder of the *British Bee Journal*, and for a number of years its able editor, died at Southall, England, on the 2d day of March, 1894, aged 63 years. Mr. Abbott was a practical and progressive bee-keeper, as the pages of the old *British Bee Journal* show. Our business relations with him were very pleasant.

THERE have been some guesses and speculations among our readers as to who that prepossessing young (or old) lady is who is represented so graphically in this issue, as "treeing" the Rambler, and who appears to such good advantage on page 181, March 1st issue. Well, to tell the honest truth, we are as much in the dark as our subscribers. She simply signed Eugenia Morse to an "open letter" which, on account of the good news for the Rambler, we were very glad to publish.

A NICE way to make foundation transparent, for exhibition purposes, if not already so, is to apply the sheets to a gentle heat for a short time. Just try the experiment by cutting a sheet of foundation in two, and hold one over the stove a few inches from it, until it becomes quite soft, and let it remain in this condition for a couple of minutes suspended over the stove. Now lay it down by the side of the other sheet from which it was cut, and notice how much more beautiful one is than the other.

OUR apiarist reports that the Carniolans were the first to bring in pollen this spring. As to their disposition they are just a little more *toughy* than the average Italians. This we have thought was true of colonies of this race we have had. One marked peculiarity of all the Carniolans we have ever seen is, that if one bee flies up to sting like a shot, the chances are there will be a dozen or more that will follow

suit, all going for the same target. With Italians and hybrids the case seems to be a little different. One will dart up; and if the disturbance continues, perhaps one or two more; and so on the little defenders come out one after another. But the Carniolans have learned, perhaps by experience, that it is better to make a *charge*.

"NEW FIXIN'S."

A WEEK or so ago we had a very pleasant call from Mr. Chalon Fowls, of Oberlin, Ohio. He is the friendly bee-keeper who used to visit the writer while studying in that place; and many and many an hour have we spent discussing the subject of bees. Some nine or ten years have gone by, and it seemed like old times to discuss, not the old questions, but new ones developed by Father Time. Among other things, Mr. Fowls said he had learned to look with caution upon new devices or implements that seem to promise much, especially if they appear to foreshadow revolution. There was a time when he was induced to invest in all the new "fixin's," but in later years he has learned to get along without them; and as the years go by he found he had saved by not investing in what apicultural experiment stations and private individuals had found to be worthless. He makes money at bees, but finds it necessary to hold in his enthusiasm a little until time shall prove all things.

And right here it may be said incidentally, that there is wisdom in establishing experiment stations, the expense of which shall be borne, not by one individual, but by the State. But it does not do to rely entirely upon the conclusions put forth by any one station, because the climate, personal prejudices, and a few other things, are apt to be misleading.

WINTERING AND SPRINGING UP TO DATE.

WE are happy to announce that, so far, not a colony in our 125 has been lost. Indeed, they are in better condition now than they were last fall. They have been raising some brood during these warm beautiful days, and young blood is making a pleasing appearance on the brood-frames. All our colonies, with the exception of one, were under absorbing cushions; but even that one under a sealed cover wintered just as nicely as the rest. In fact, it is in splendid condition. A year ago at this time our loss, part under sealed covers and part under absorbing cushions, was 20 per cent.

While we have not this past winter lost any whatever, it does not signify at this date that we shall not lose any; but when bees have wintered well and "springed" up to this time, we naturally feel hopeful that they will spring it out into summer in good condition. A year ago, besides the loss of many, our colonies were in bad condition; but this year, there is not one. In fact, we have not even had to unite.

It just occurs to us that the bees do say something quite positively on the 8 vs. 10 frame hive question by Taylor and Miller, in another column. It is this: For this locality, and it seems to us for most northern localities, the bees say that, if you give us a ten-frame hive we will fill eight of the combs with brood, and put honey into the two outside combs. Their manner of *saying* it is by *doing* that very thing—not invariably, but generally. Of course, they do not *say* that they want an eight-frame hive; but the *bee-keeper* says, at least most of 'em, "I'd rather have the honey in those two combs in the supers. But another may say, "I want that extra honey in the brood-nest for a reserve, while the first mentioned will assert, "I don't, because there will be enough honey scattered among the brood." Then, again, the average Italian queen does not usually lay more than the capacity of 8 Langstroth frames. The point is here: If the bees do certain things in a certain way, different bee-keepers will adopt their appliances to meet those certain ways.

EXTRACTORS CONTAINING REELS HOLDING TWO PAIRS OF COMBS, ONE BEFORE THE OTHER.

SOME time last fall we constructed a Cowan reversible extractor, made so that the two pockets could be revolved on one pair of hinges, thus making a four-frame extractor with a can only 24 in. in diameter. The combs were thus made to revolve in pairs—one comb in front of the other. A sheet of tin was put between each pair of pockets so as to prevent the honey from the inner comb from being thrown on to the next. We sent the machine to our neighbor, Mr. Burt, who had some more honey to extract. A day or so later we went down on the wheel to witness the result. When we came to extract we found we could throw out the honey, but we could not do it nearly as nicely and rapidly as with machines having each a comb-pocket swinging on separate pairs of hinges; worse than all, the side of the combs next to the sheet of tin would have perceptibly more honey in the cells than in the sides of the combs next to the circumference of the can. There is no getting around the fact; extractors having two pairs of combs in the reel—one comb in front of the other—can not do the work of extractors arranged so that each comb will be equally distant from the center of the extractor. Centrifugal force, at the same speed of revolution, will be always greater on combs furthest from the axis of revolution, and hence theory and practice say that one side of every comb in extractors of the type mentioned at the outset will be extracted cleaner than the side that comes next to the center of the can.

THAT "BAD FIX."

We are sorry to refer again to the subject of golden Carniolans, about which Mr. Alley has taken up of late in the *Apiculturist* some fourteen columns of matter to refute three or four

short paragraphs of ours. Well, he thinks he has us at last in a "bad fix." He refers to an old editorial of ours, years back, wherein we mentioned that one of our imported Carniolan queens showed yellow blood; but Mr. Alley, in his quotation, leaves out the *very point* in that editorial that would weaken his whole argument; viz., that we did not think this queen was pure. At all events, Mr. Alley does not deny that his original yellow Carniolans were produced in an apiary but a little over a mile from an apiary of Italians—yes, he admits all this in *American Bee Journal*, page 330, Vol. XXVIII. Granting for a moment that there is yellow blood in the Carniolans, the proximity of that apiary of Italians completely upsets his whole array of arguments. No *reasonable* authority disputes that queens and drones may fly much further than a little over a mile, and hence it is perfectly easy to account for at least a part and probably all of the yellow blood in his golden Carniolans. Lastly, Mr. Alley has put quotation-marks around sentiments attributed to us, with the wording slightly twisted from what we actually wrote. This is not the first time he has done this.

WINTER VIEW OF OUR OWN APIARY—P. 270.

In the garden department A. I. R. has told something about the picture on page 270 so far as it relates to horticulture. It remains for us to tell you of the bee side.

As you will notice, the bees are either in chaff hives, one and two story, or in single-walled hives protected by winter-cases. The last mentioned are shown clear in the corner. The one and two story chaff hives appear in the foreground. There are more of the two-stories, because we had those in the first place; and as they have done us most excellent service we did not feel like throwing them away for the lighter and more convenient one-story chaff hives, such as we now recommend. This picture was taken on a cold, blustering day, at a time when some snow was falling. A few hours before, the evergreens were loaded down with snow; but a thaw in the morning, before the camera shot in the afternoon, disposed of a large part of it. With the exception of last winter, and the one of 1881, we have wintered bees with almost no loss so far, in this inclosure of evergreens; and these form a very important feature of the wintering problem at the Home of the Honey-bees. As Mr. Boardman well says in another column, referring to those about his place, they afford great protection. These trees were set out in 1879, and now most of them are from 20 to 25 feet high. Near the ground the branches are tightly interwoven so that it is almost impossible for one to make his way through, even if he were to crawl on his hands and knees. The factory buildings on the east and south shut off the wind from those directions, making the inclosure complete.



But Jesus said, . . . Ye know that the princes of the Gentiles exercise dominion over them, and they that are great exercise authority upon them.—MATT. 20: 25.

A few days ago Mrs. Root came to me with unusual animation, saying she had found an excellent article in the *Sunday School Times*. She said it was one of the best articles she ever read in her life anywhere, and she finally concluded with something like this:

"Why, I really believe it is the best thing I ever read in my life, anywhere."

I could not help smiling; for had it been myself, such unusual enthusiasm would not have been any thing strange at all; but she is so careful and so moderate in her use of adjectives, especially in the way of commendation, that I thought there must be something exceedingly remarkable in the production. And, by the way, I have often wished I could induce her to let me give the world some of her excellent ideas through these Home Papers. In fact, I have urged her to write something herself; but she has always been so very positive that it was out of her line, and that she had not any thing worth giving to the world, I have been obliged again and again to give it up. She will probably never write any thing for the papers unless some remarkable force or influence, or set of circumstances, is brought to bear. Never mind. I have something that will give you a glimpse of her character, even if she did not write it herself. Before I got through reading it I was obliged to laugh outright to think that anybody should have given in print her ideas so exactly. No wonder she was pleased with what she found. Well, after all this ramble I am ready to make some considerable clippings from the article in question. It appears on the first page of the *Times* for Feb. 17; and the title is, "A Domineering Spirit." Let us examine the first paragraph:

To "domineer" is, literally, to exercise control or mastery; but, in the ordinary meaning of the word, the man who domineers is one who has no mastery over himself, but who wants to show his mastery over somebody else. Dominion is God-given power; but domineering is evidence of utter lack of God-likeness in the use of power. He who has a right appreciation of the responsibilities of dominion can not domineer over any person or creature in the realm of his dominion. Domineering is utterly incompatible with the sense of right dominion.

Very good, is it not? Now, this next paragraph shows Mrs. Root's special individuality completely:

The domineering spirit manifests itself in weak men and women in every position and grade of life, from the sovereign on the throne to the head-servant in the kitchen, and to the owner of a horse or a dog in the lowest walk of life.

In this world of ours, everybody and every dumb animal has rights of its own. I have sometimes thought these individual rights were like a little circle that surrounds a person, animal, or insect. A man has a right to live. It is his privilege to go about in the world, and a certain amount of deference and respect belongs to him. The open street, or "king's highway," as we used to term it, is, to a certain extent, his property—at least, he has a right to use it, providing he does not let his circle encroach too much on that of somebody else. A child, also, has its rights. If some one should say, "Here, you kid, get off the sidewalk, and let me get by," the kid would be very likely to resent

the encroachment on his rights, and other people who might be near would also resent this encroachment. The child has as good a right on the sidewalk as anybody else—of course, within the limits before mentioned. Now, the horse has rights also. He knows what is due him, and most horses are inclined to resent encroachment on their accustomed rights. So long as a horse or dog attends to its business, and does good and faithful service, it is entitled to respect, and to a place in the world. The domineering spirit disputes these rights, and encroaches on them, and most good people are moved to make a protest when this domineering and overbearing spirit comes around. By the way, I forgot to say that even a honey-bee has its rights and sense of justice. If you do not believe it, let some of these domineering, overbearing chaps undertake bee-keeping. The bee, like the old hen with the chickens, or the dog or the horse, gives the domineering person to understand that its rights or its circle I have spoken of is not to be readily trampled on. If you treat the honey-bee in a proper way you may open its hive, and do almost what you please. But you must be thoroughly acquainted with it, and you must pay a certain sort of deference or respect to its rights; and the same with the dog. You can abuse him considerably, and he will take it meekly; but if you tread on his tail, and especially if you do it on purpose, he will, if like most dogs, give you to understand that said tail is his own personal property; and the same with the hen and her chickens. She tells you to go along and attend to your own business, and she will attend to hers.

Mrs. Root is not a quarrelsome woman. Why, what an idea! Wait a bit. There is one way in which you can make her aggressive. A man who had charge of a pony of ours once struck it a severe blow with the whip when the little fellow was not doing a thing out of the way. He was behaving just as well as he knew how, and the man who struck him was obliged to admit it. He said he did it simply to let the pony know who was master. Now, if you think that is the way to get along with a horse you could not get along with Mrs. Root. Another thing, when a man is whipping a horse brutally, and somebody tells her not to make a fuss about it, as the man is drunk, and does not know what he is doing, it does not pacify her a particle. Under the circumstances she always wants somebody to take the whip and use it on the man, and take the horse away from him. Let us read a little more from the *Times*:

And, wherever this spirit exists, it is a sign of weakness and not of strength. God gave man dominion over the lower animals, but God authorized no domineering over any beast or bird in subjection to man. God gives man dominion in various spheres of social life—spheres of state, and church, and school, and family, of practical business, and of mere manual labor—but God holds man responsible for the measure, the manner, and the spirit, in which he exercises his deputed authority. Only as man forgets the source of his authority, and lacks fitness for its exercise, does he domineer over God's subjects, instead of serving God in his exercise of right dominion. Yet many a man is thus forgetful and thus incompetent, and therefore it is that it can be so truly said of one who domineers in his realm of dominion:

"But man, proud man!
Drest in a little brief authority;
Most ignorant of what he's most assur'd,
His glassy essence, like an angry ape,
Plays such fantastic tricks before high heaven
As makes the angels weep."

Oh, dear me! I knew when I started out to give you this article that it was going to cut severely on my poor self. From what I have said, you might think that I would be especial-

ly free from a domineering spirit. Yes, my good wife assured me, when she gave me the article, that I must not think that, because she requested me to read it, I particularly needed such a sermon. I believe it; for, out of the kindness of her heart, she overlooks and forgives her poor husband's weaknesses. May God help me to see my own faults, and mend them; for if God does not help me I shall never be at all worthy or fitted for the place he has assigned me. Let us read again:

As a rule, the greater the man the less show of power, on his part, in his bearing toward those who are in his realm of dominion. Greatness shows itself in the reserve of power beyond its manifest exercise. A really great man, in any sphere of life, puts a subordinate man at his ease in an interview with him, while a man of small caliber causes those who approach him to suffer under a sense of being counted by him as in some sense his inferiors.

Does anybody need that last paragraph as I need it? If so, may God help him.

It was a well-known fact in the days of African slavery, that the harshest tyranny over a gang of blacks was likely to be exercised by one who was himself a slave, and who, having never controlled himself, was unfitted to control others. And the same principle prevails in every realm of dominion—the smaller the man in authority, the greater his liability to domineer over those in his sphere. A domineering spirit is inconsistent with greatness.

Did that ever occur to you before, my friend? The smaller the man in authority, the greater his liability to domineer over those in his sphere.

The nearer the brute a man is, the surer he is to misuse the brutes which are under him. A horse fares better in the care of a man of character and refinement than at the hands of a degraded hireling, who has the power of cursing and beating the horse which he is set to drive. And many a dog cringes and suffers under the scowls and kicks of his *inferior* owner, who knows nothing of the true power and privilege of dominion beyond the opportunity of domineering. The whole brute creation groaneth and travaileth in pain until now, because of the curse of the domineering spirit in the realm of God-given dominion.

I presume likely the above remarks in regard to cruelty to dumb animals is particularly what commended the production to Mrs. Root. When I first began to court her, in the days of her girlhood, I remember her good old father once said to me, jestingly, "If you expect to get along with her you must let her have her own way in seeing that all domestic animals and dumb brutes about the premises are well fed." Yes, I found that out; and I found out, too, that it was not feeding alone that commended itself to her. To see a child or an animal suffering for food is indeed sad. Of course, she believes that children and dumb brutes should be made to obey proper authority; but her convictions have always been very strong to the effect that pounding and whipping are rarely if ever necessary to secure the best kind of obedience. I used to believe in punishing by whipping them; but I have been conscious for some time that I have been gradually losing hold on that idea. When people have been neglected until they have become very bad, it may be necessary to do some whipping. Mind you, I say it *may be*. I am not *sure* of even that; and I believe it is due to my good wife—to the fact that she practices what she preaches—that I have been, during these many years I have known her, gradually changing my views. Let us read again:

Domineering grows out of a mistaken view of the limits of dominion; and this is peculiarly the case in the treatment of children. A parent supposes that his children, at least, have been given to him, and that, because he has dominion over them, he can treat them as he pleases. A teacher thinks similarly of the children put under his control for

the purpose of their education and training. He feels that, having dominion over them thus far for the time being, he can exercise that dominion unhindered. But both parent and teacher are to remember that the child has a spirit of dominion as well as themselves, and that their dominion is not to interfere with his dominion.

You will notice the writer of the above tells the same thing, only in a little different language, from what I have been saying. Let us read again:

God gives to no man dominion over another man's individuality and truest personality. Every child comes into the world fresh from God, with its own peculiar identity and distinctive self, as apart from every other human being in the universe. While that child is brought under the dominion of parent and teacher and civil ruler, their dominion over the child is to be exercised in view of its dominion over itself, and not to the doing away with that dominion over its inner personality, which it has received from God, and for which it is responsible to God. He who recognizes a child as a representative of God, and as a charge from God, will honor that child's individuality, and will give deference to that child's domain of his sacred personality; he will not domineer over the child. To despise the child's personal dominion, or to trench upon it, is to domineer in a realm where the child is responsible only to God. A child will resent domineering from parent or teacher, because God never authorized domineering over any creature of his by any creature. A child who perceives that one who is over him in the home or in the school has respect for his rights in his own realm of dominion, will be all the readier to respect the rights of the one above him in the parent's or the teacher's realm of dominion.

Well, I declare! After reading the above I am almost ready to say with Mrs. Root that this production on domineering is one of the best things I ever saw anywhere. Now, then, ye husbands and fathers of families, brace up and be ready to receive with meekness and honesty your part of this wonderful sermon to us all.

Most contemptible of all is domineering in the closest and holiest of relations—in the marriage life. The husband, claiming to be the head of the house, often seems to think that there is no other head than his in the house, and that therefore there is no room for a wife's dominion over her own personality, her own opinions, her own tastes and preferences and moods of feeling, and her own conscience. He even feels entitled to disregard her prejudices, to treat lightly her counsel or cautions, to fail of giving honor to her sentiments and convictions, and to hold closely and sharply to his view of any question at issue, despite her counter-views, without even an effort at an open-minded examination of the question in its discussion with her as an equal, if not, indeed, as a superior. This is domineering of an inexorable kind.

It is true in this sphere, as in every other, that the domineering spirit is a sign of weakness and of smallness, and that the larger-minded the man the surer he is to be free from domineering over his wife, and to be prompt and hearty in his recognition of her rights, on the one hand, and, on the other hand, of her help to him in his best endeavors through her individuality and independence and her womanly instincts. Even the man who is positive in his convictions and outspoken in expression of his opinions in his ordinary ways with others, is deferential to the personality of his wife or child in proportion to his own love and largeness.

Domineering can not accompany goodness or greatness. It is an accompaniment only of littleness of nature, and of false views of power and dominion.

While I was reading the above the first time, I was sitting at my secretary in our home. This secretary is where my agricultural periodicals are all deposited. I do not always read them as fast as they come from the office. I try to, but stern duties oftentimes compel me, reluctantly, to let them accumulate. Sometimes the lid of the secretary will not shut up, and Mrs. Root can not have every thing looking as tidy as she likes. Then she suggests putting the surplus into a basket; and she sometimes

adds, "You know you will never read all of them, anyhow." But I keep thinking I am going to catch up. Well, during the evening in question I was sitting at my accustomed secretary; and, by the way, below my books and papers there are some drawers that I never use, which she has appropriated for the children's clothing, etc. When she wishes to get at one of these drawers, I am obliged to move away just a little. Well, now, please notice right while I was in the midst of this very eloquent appeal to domineering husbands, she came in in a great hurry and wanted to get into one of those drawers. I was so fully occupied with my reading that I did not move until I felt the well-known corner of the drawer against my knees. My friend, when your whole mind is taken up or absorbed with something you are trying to grasp, did you never feel a little irritability because somebody bumped or pushed you? If so, you can understand me. Had my good wife said, "Husband, will you please pump some water and fill the reservoir?" I would have jumped up with alacrity, feeling pleased to think she permitted me to use my strength so as to save her own. But this other, somehow, struck me differently; and, if I recollect aright, I grumbled a little as follows: "Oh! I do wish you would keep your things somewhere else than in these particular drawers that must be got at when I am specially interested." Then I went on reading as before; and, come to think of it, I do not believe my conscience troubled me very much either. In about four minutes, back she came, and was tugging at the drawer, and bumping it against my knees as before. I looked up and she said, very mildly, "If I were afraid of you I would not come back to bother you quite so soon. But you see I am not a bit afraid, even when you scold." And then I began wondering whether I was not, after all, a little bit domineering. Oh, dear me! if it were not for the grace of God, and for the love of Christ Jesus which has all these years had a permanent lodging-place in the hearts not only of myself and wife, but, I trust as well, in the hearts of every one of the five God has given us, with my special characteristic traits, with my impulsive and perhaps aggressive tendencies, I shudder to think of the mischief Satan might have done in our home in this especial line we have been considering. Now, I have not said very much about our text, and I am going to finish without doing more than to quote the verse that follows the text at the head of this talk.

But it shall not be so among you: but whosoever will be great among you, let him be your minister.
—MATT. 20:26



GARDENING IN WINTER.

Perhaps I should explain a little in the first place, by saying that Ernest took, from the roof of our machine-shop, a photograph of the apiary, without telling me any thing about it; therefore I did not have any time to arrange things or to take off some of the sashes. (See engraving on page 270.) The glimpse you get is a haphazard one looking in upon us unawares. The special point I wish to call your attention to is the effect of the exhaust steam. One bed—the one nearest the factory—does not show in the cut at all.

Let us commence at the lower left-hand cor-

ner of the picture where you see the men have been drawing basswood through the apiary to the lumber-yards. I knew the ground would be thawed out all winter where this roadway crosses my line of beds; and to prevent a great mud-hole at the crossing I put in an immense piece of sawed flagging some 8 or 10 feet square. This stone soon became warm—sometimes quite hot; and it has had scarcely a bit of snow on it this winter, for it has thawed off as fast as it fell. The men who draw basswood very soon began to complain of the mud-hole on each side of this stone; therefore we piled in lots of tin scrap from the tin-shop, and then covered the scrap with coal cinders; but it took so much time to make decent traveling that it reminded me of the Slough of Despond where so many cartloads of road material were apparently wasted.

Well, this exhaust steam did some other things that we did not calculate on. Down by the pump you will see where the snow is thawed off as well as along the beds. This is right over the water-pipe that carries water from the big windmill on the hill down to the barn, for watering the stock. This water-pipe happened to cross the tile carrying the exhaust steam, coming pretty close to said tile. The consequence is, that, without planning for it at all, we have warm water for our stock to drink, no matter how near zero the weather may be. The ground becomes so hot near that tile carrying the exhaust steam, that it heats a good many feet each way; therefore from 12 to 20 feet the standing water in this pipe is more or less warm. When some is taken out to water stock, this hot column of water moves down toward the barn. Some more becomes hot, and this moves down, and so on; and you just ought to see the rank dandelions along the line of that water-pipe. They have been in bloom more or less all through February and March.

Let us now walk along toward the house, which you see in the opposite corner of the picture from where you started. You will notice the snow is thawed from the ground for several feet away from the glass. This ground also dries up so quickly that it is dry ground to walk on, most of the time, even in winter. The most trouble we have had with our beds is with too much heat; and you will notice some of the sash are drawn a little to one side, even though it was a cold winter day, with no sun shining, when the picture was taken. The end of the bed nearest the roadway is where I have been getting ripe strawberries. During the last of February, however, the cold was so great that the green strawberries were either frosted a little or cooked by too much heat—I can't yet tell which. Had we used shutters or straw mats over the sash for a few nights, it would probably have been better; for such intense cold outside of the glass, and so great a heat inside, do not seem to be quite the thing for tender stuff.

Over at the further end of the beds you will notice a cloth-covered frame. This is double width—that is, the width of two sash. During a warm spell in January I had in this frame a nice show of beets, spinach, and onions. In fact, there was stuff there almost large enough to sell; but during the severe freezes in February, pretty much every thing was lost. Of course, we had *heat* enough; but it does not make much difference how great a heat you have; with only a cloth cover between the plants *inside* and almost zero weather *outside*, the thing does not work, as I have explained. Cloth covers will do very well over onions and strawberries, or things equally hardy, providing you do not have very much heat underneath the cloth. I think cloth covers would,

however, answer nicely for spinach, but I have not tried them very much. When I was down at Newcomerstown my friends Wardwell and Nicodemus told me that beautiful lettuce had been raised in their locality, with no covering except cloth, and I think we could do the same thing here if the cloth were covered with shutters, straw mats, or something of that sort, when the temperature is down to, say, 5 or 10 above zero.

Now, just as we get to this cloth-covered frame you will notice another streak of bare ground running down to some sashes at the left side of the picture. After I got my steam-heating apparatus nicely at work I noticed there was an accumulation of water at this point—that is, water in the tiles; and as there was a slight depression right where it accumulated, so as to interfere with the passage of the steam, I was obliged to lay a line of tile to carry off this condensed steam; and, without thinking about it, I had another hot piece of ground over this tile, and where it discharged into the open air I soon found we had a hot spring rivaling some of the hot springs of California. I made a little reservoir of this hot water, and set a frame over it to hold sashes. The hot water was carried in tiles all around the bed, making sub-irrigation, and regulating temperature with hot water besides. Well, this worked beautifully during the month of January, and I invited our friends at the experiment station to come and see my combination of hot-water heating and sub-irrigation. With the severe weather mentioned, however, my Prize-taker onion-plants began to look a little sick. You see, the beds are covered with the slatted glass I have mentioned before; and the onion-plants were thriving to such an extent that they actually stuck through the spaces between the glass; but a zero temperature shriveled up their tops, and shriveled up the bottoms of some of them also. Hot water at the bottom of an onion, and zero around its top, did not work first rate. Notwithstanding, we have a pretty good stand of onions in that bed, and it comes as near being an automatic hot-bed as any thing I ever saw.

There are various other plats on our grounds, not shown in the picture, where the exhaust steam has been crawling off into our drain-tiles where we least expected it. Beyond the evergreens up near to our house we have been planning to have some hot-beds for flowers; but it has not yet materialized, unless the nice bed of dandelions, with bees buzzing all over them, might be called a floral display. The exhaust steam, after going all around under the floor, as I have heretofore explained, making so many twists and turns you might think all the heat would be tortured out of it—the surplus, after doing all this, finally comes out of the center chimney near the little observatory with a fence around it, on the peak of the house. The artist who did the half-toning made a mistake in retouching, and put in some steam coming out of the north chimney.

Right above the poultry-house is seen the residence of Mr. J. T. Calvert, our son-in-law, and business manager of the establishment. The building next to the east belongs to Neighbor H., who married Mrs. Root's sister. The artist has been trying to give it some "retouches," but I for one do not very much admire them. Ernest's home, still further to the right, does not show in the picture; but it is an almost exact counterpart of Mr. Calvert's, both being built after the same plan. Perhaps I should add that the row of hot-beds in the center of the picture runs east and west. Beyond the evergreens is a street separating our home from the rest of Rootville across the way.

CHEMICAL FERTILIZERS VS. STABLE MANURE, ETC.

A. I. Root:—On page 251 of GLEANINGS for March 15 I find the following note concerning a little notice in the *Rural*, about Mr. T. B. Terry's new book:

Now, I believe every word the *Rural* says; but I am a little surprised to see they give such extravagant praise to a book that does not agree with them at all in the use of chemical fertilizers. In fact, I sometimes feel troubled to see the *Rural*, week after week, give such tremendous puffs to these things, and perhaps I might confess that I also feel troubled to see the results of Terry's experiments, year after year, indicate so clearly that every chemical fertilizer he undertakes to use does just no good at all. I really wish we could put Terry on some sort of soil where fertilizers would avail. But I am afraid that, even then, he would get such tremendous crops of clover that the fertilizer would be thrown into the shade or into nothingness. And then the thing that troubles me again is, he would not use any sort of fertilizer to get the clover started. Now, T. B. Terry is certainly a great teacher; and the *Rural New-Yorker* is also another great teacher. How in the world can it be that their teachings, or, rather, their experiences, should differ so tremendously?

I am somewhat surprised that you should infer that the *Rural* might not speak well of a work that appeared to upset some of its own experience. We are not bigoted in the least. It gives us pleasure to record any honest success, and we care not whether that success is reached through our advice or against it. This is a great big country. Soils, climate, and conditions, differ. When Mr. Terry makes his little farm pay without the use of fertilizers, we rejoice at it, and are thankful that he has not only the ability to do so, but the power to tell others about it. Permit me to say that my experience has shown me that fertilizer farmers are more charitable toward those who still cling to the "old way" of manuring than our "stable-manure" farmers are toward those who use phosphate.

Our reports of fertilizer farms are true—as true as Mr. Terry's story. Our experience is, that nine tenths of those who begin to use fertilizers are "convinced against their will." We can, if you like, show you dozens of men who, by the use of fertilizers, are raising larger crops, and making more money than Mr. Terry, and every one of them fought hard against the first use of fertilizer—in fact, few of them could see any benefit from the first few applications. Please don't be troubled about our fertilizer talk. Terry will come to fertilizers before the *Rural* goes back on them. When you see a report of a big yield on fertilizers printed in the *Rural*, please remember that it is not a fairy-tale but a fact.

In 1890, \$34,038,453 worth of fertilizers were manufactured in the United States. Some of this was undoubtedly wasted, for the reason, chiefly, that farmers did not understand their use. Is it not perfectly legitimate for us to attempt to try to educate farmers in this line? Will you not be kind enough to say that a good part of our fertilizer talk (as on page 168) is in the line of education, and not a "tremendous puff"?

H. W. COLLINGWOOD,
Managing Editor of the *Rural New-Yorker*.
New York, March 19.

[Many thanks, good friends of the *Rural*. I confess it will be one of my "happy surprises" when I find I can make chemical fertilizers take the place of stable manure. For instance, a great many times valuable crops in our plant-beds are not pushing ahead as we should like to have them do; or at some stage of their growth they begin to slacken. I can not cover them with stable manure—or, at least, not very

well; but if I had some chemical that would do the work it would be worth lots to me. Guano does the work every time; but it is very expensive, and last spring I could not get it; and, besides, the Mapes people use guano largely in manufacturing their fertilizers. Now, I am acquainted with guano, and it does the work every time. Why not use the guano without any mixture? You still advise nitrate of soda, in strong terms. How does it come that nitrate of soda never does a bit of good on any crop for me? In fact, I have put it on onions until it did them harm, but it has never done them any good. I am just about trying it once more on tomatoes, as I notice one of the experiment stations is so positive that it does push them. Then, again, there is that great market-gardener, J. M. Smith, of Green Bay, Wis., who says, "Chemical fertilizers have never been of any value to me, either on good land or poor land." Mr. Smith is one of the greatest gardeners in the whole wide world. If he is making a mistake while he is such high authority, he is really doing harm. Then, again, our Ohio Experiment Station report as I have reported in regard to the nitrate of soda. I think I have read almost every thing that has been said in the *Rural New-Yorker* in regard to chemical fertilizers. Yes, I do know that the *Rural* is ready, and always has been, to speak out frankly and give both sides of any vital question.

WATER-CRESS IN THE GREENHOUSE.

About the first of January I told Fred we would try once more to raise water-cress, and we sowed some seed in three or four different places—in the greenhouse that is shaded; in the one across the road, right in the sun; in some hot-beds heated with exhaust steam, and in various other places. The seeds in that little automatic greenhouse across the way came up at once, and, in fact, every seed of every kind I ever tried always grows there. First, the whole greenhouse catches the first rays of the morning sun, and has it all the day unobstructed until sunset; then the sloping sashes on the east side get the last rays of the declining sun. Further, every bed has bottom heat from the exhaust steam going through the tiles. Last, but not least, the automatic hot-water pipes overhead keep the temperature perfectly even, day and night. Well, the little water-cress plants were almost microscopic when they first came up. I watched them and watered them, and enjoyed seeing them show progress every single day. Yes, I could see that the leaves were larger in the morning than they were the night before, and larger in the evening than they were in the morning; and the water-cress plants soon became my special pets; and when they began to crowd a little we transplanted so as to give them room; and I believe they bore transplanting about the best of any plant I ever had to deal with. Why, in two days after transplanting they were sending out little white roots, something like strawberry-runners, at every leaf-joint; and before I knew it they were crowding again. I presume they now occupy a bed about six feet square, and it is such a perfect mass of luxuriance that I believe we can raise water-cress as cheaply as lettuce—may be cheaper still. They have no insect-enemies, and never blight, that I know of; and when they once get well rooted, I believe they make the most astonishing growth of almost any plant we have—that is, if we keep the ground pretty well soaked with water. I do not think we can very well overdo watering. We are now selling it around town in $\frac{1}{2}$ -lb. bunches, for a nickel a bunch. By the way, we now sell water-cresses, radishes, let-

tuce, and every thing of that sort, put up in little paper bags—just a quarter of a pound in a bag. The paper bag is a protection from the frost during the winter, and keeps the plants clean, free from wilting, and away from the dust in summer time. The paper bags are now made so cheaply that the expense is not worth mentioning; and these paper sacks are ever so much more quickly handled on the wagon than weighing out the stuff as we sell it.

HOW SHALL WE EAT CRESS?

I believe you can use either pepper, salt and vinegar, or all three if you choose; but as vinegar does not agree with me, we just cut the cress up in sprigs, say three inches long, and drop it into a dish of clean water, and this dish is set on the table. Just take out the sprigs, and eat them with your bread and butter, your beefsteak, or with any thing else, for that matter. It is just the nicest relish for nice beefsteak, I think, I ever got hold of; and even with bread and butter it has a wonderfully refreshing flavor, and I have eaten it in quite considerable quantities on purpose to test it, and it agrees with me excellently.

I believe water-cress is now advertised in most seed catalogs, but there seem to be two varieties of it. Now, please do not get water-cress confounded with what is sometimes called upland cress. The latter is a vile weed, and never ought to have been put in a catalog by any honest seedsman. The reason why I think there must be two kinds of water-cress is, my German friend Ben says they have it in the old country, with fine narrow-leaved foliage; and Mrs. Root, on tasting it, said they used to have it in England, but it also had a finer foliage, with a very narrow leaf, something almost like grass. Now, if any of the friends can mail me a specimen of this fine-leaved water-cress (mind you, I want the kind that grows in running water—not pepper-grass nor upland cress) I shall be very much obliged indeed. I am impressed with the idea that great quantities of genuine water-cress could be sold all over our land, if people once get hold of it. Who will help?

MORE ABOUT ONIONS.

If you would like to see a big crop of onions, plant your sets just early enough in the fall to get them nicely rooted, ground in good order, and, as soon as planted, cover the bed with good fine manure two inches deep. You will have no farther work or trouble with them until they are ready to harvest. The mulch will keep the ground in perfect order.

Chenango Bridge, N. Y. S. M. KEELER.

KIND WORDS FROM OUR CUSTOMERS.

Mr. Root:—I have just received your catalog for Jan., 1894, and would say that I now have 42 hives of your make—that is, the Dovetailed hive. I would have no other for my bees. JEROME BARNELL.
Wahoo, Neb., Mar. 7.

I have received my supplies through your branch in San Francisco; and as I have heretofore used other goods I can fully appreciate the value of yours, and you will hereafter have my patronage.
Stockton, Cal., Mar. 16. J. K. GANNIT.

Mr. Root:—I started in something better than the bee business last fall, and it cost me less. It can be bought without money and without price. I am still continuing and advancing in the good way. I am only 28 years old; have a good farm, and am doing very well. I was what they call a "tough case" before I was converted.
Brant, Mich., Feb. 5. O. E. GIBSON.

COMB FOUNDATION.

Made by an
IMPROVED PROCESS ON NEW AND
IMPROVED MACHINES

of my own invention,
which enables me to
produce

The Cheapest.

Prices on 5 lbs. or more will range from 35 to 50c per lb. Send for prices and samples.

W. J. FINCH, JR.,

931 E. Monroe St., Springfield, Illinois.

In responding to this advertisement mention GLEANINGS.

Control Your Swarms, Requeen, &c.

Send 25 cents for samples of West's Pat. Spiral wire Queen-Cell Protectors, and Pat. Spiral Queen Hatching and Introducing Cage, also best Bee-Escape, with circular explaining. 12 Cell-Protectors, 60 cts., or 100 for \$3.; 12 Cages, 60 cts., or 100 for \$5, by mail. Address

N. D. West, Middleburgh, Scho. Co., N. Y.

Sold also by all the leading supply dealers.



THE BEST

is what I mean to give my patrons. Drones from selected queens. Breeders are carefully selected from the best. Personal attention and assiduous care given to rearing queens that they may be of the highest type.

Untested, \$1.00; after May, 75c; March and April, 6 for \$4.75; dozen for \$8.50. May and June, 6 for \$4.00; dozen, \$7.50. Later, 6 for \$3.50; dozen, \$6.50. Tested, 3-banded, \$1.25; 3 to 5 banded, \$1.50 to \$4.00. Send for circular for particulars. Make money orders payable here.

J. B. CASE, Port Orange, Vol. Co., Fla.

In responding to this advertisement mention GLEANINGS.

Good! Good!

Those wishing the finest and best business bees, both for pleasure and profit, should know that Jennie Atchley is headquarters for such queens. I breed both the 3 and 5 banded strains, at the following prices: Untested (March, April, and May), \$1.00 each; \$5.00 for 6, or \$9.00 per dozen. June till October, 75 cts. each; \$4.25 for 6, or \$8.00 per dozen. I breed my queens in separate yards, and I have as fine Italian bees as there are anywhere. Nuclei and full colonies. I have one straight merchandise rate on bees by express—lowest in U. S. Fine breeders always on hand; 3-banded, \$5.00; for straight 5-banded breeders, apply by letter. Also bees by the pound. I guarantee *all* my queens to be good and serviceable, and my fine faultless breeders unexcelled in the world. Safe arrival and satisfaction.

I also have a carload of A. I. Root's Dovetailed hives and Bee-supplies to accommodate my Southern customers. Dadant's foundation and Bingham smokers. Send for catalogue.

JENNIE ATCHLEY, Beeville, Bee Co., Texas.

NOW IS YOUR CHANCE.

To buy cheap. Bee-keepers' Supplies, hives, sections, fdn., etc. Write for price list. **ROOT'S GODS.**
JOHN NEBEL & SON, High Hill, Mo.

The Triumph Incubator,

Manufactured by Ed. W. Cole, Kenton, O., is the cheapest and best. Eggs for hatching, from stock which won nearly 300 premiums the past year.

Send for Description and prices.

In responding to this advertisement mention GLEANINGS.

Tar-Heel Apiaries, Goldsboro, N. C.

Abbott L. Swinson, Proprietor.

After ten years' experience I breed only American Albino Italians and Golden Italians; 3 and 5 banded bees. Queens, \$1.00 to \$10.00; bees, \$1.00 per lb.; nuclei, 75 cts. per L. frame. 200 bu. "Cook's" Long Staple Cotton Seed at \$1.00 per bu., f. o. b. Lint is 1½ inches, and brings premium of 2 to 4 cents.

In responding to this advertisement mention GLEANINGS.

Trego on Deck

With those five-banded Golden Italian Queens for 1894; \$1.00 each. Circular free.

S. F. TREGO, Swedona, Ill.

Notice to Kansas Bee-keepers.

I keep in stock a full line of E. Kretschmer's make of Hives, Sections, and other supplies needed in the apiary, at very low prices. Also Italian bees and queens for sale. **A. W. SWAN, Centralia, Kan.**

"TROT 'EM OUT!"

I challenge any one to show up a strain of bees that are superior to my *Golden Italians*. They have excelled all competitors by practical test. Gentle, industrious, good comb-builders, enter the sections readily, are not inclined to swarm, and are perfect beauties. Descriptive circular free. Sections, \$2. per M. Dovetailed hives way down.

CHAS. D. DUVALL, Spencerville, Md.

Please mention this paper.

For Sale An interest in iron-manufacturing business. Capital required, \$5000. Will take good paper or securities. An excellent trade taught in connection.

L. L. ESENHOWER, Box 331, Spring City, Pa.

BEE-MEN, Get free Price List of Apiarian Supplies.
F. N. JOHNSON, Knoxville, Ill.

Given Brood Foundation,

About five 16½x8½ sheets to the pound, in 10-lb. lots, at 40 cts. per pound.

H. W. FUNK, Normal, Ill.

In responding to this advertisement mention GLEANINGS.

Buff Leghorns, Bred from selected stock (American, old's), the best of layers, hardy and fertile. Eggs from my best yard, \$2.00 per 15. **P. P. Forney, Hogestown, Pa.**

FREE! My price list of pure Italian bees and queens, and white and brown ferrets. Address

N. A. KNAPP, Rochester, Lorain Co., O.



Colorado Cactus, Chickens! Known as "Hen and waxy blossoms. One by mail, postpaid, 25c, or a group of 5 to 7 for \$1.00, by express. Grows in any climate. Beautiful ornament. Stamps taken. Address

R. K. & J. C. FRISBEE, 172 W. Maple St., Denver, Col.

Golden Wyandottes.

No better birds in America. Cockerel, \$5.00. Trio, \$7.00. Eggs, \$2.00 per setting.

E. D. Keeney, Arcade, N. Y.

Texas Cactus. Small one by mail, postpaid, 25 cts. Grows in any climate. Fine ornament. Stamps taken. **Miss Leah Atchley, Beeville, Bee Co., Tex.**

PERFECT cream sections, \$2.25 per 1000.

POPLAR sections, sandpapered, \$3.50 per 1000. Everything in the supply line at bottom prices. 30c per lb. allowed on wax, in exchange for supplies. Circular upon application. **I. J. Stringham, 105 Park Place, N. Y.**

For Sale. 50 colonies of bees, mostly Italians and hybrids; nearly all are in simplicity and Dovetailed hives—3 in American **A. Y. BALDWIN, De Kalb, Ill.**